PURCHASING

OCTOBER, 1948

T. A. Corcoran:

Imagination in Purchasing

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CONOVER-MAST PHRIICATION

JR V, 252 Oct. - Dec. 1948

At Your Fingertip..

Increased production and lower costs in <u>your</u> plant—through Texaco's nationwide lubrication experience





EACH PIN represents one of the more than 2300 Texaco Wholesale Distributing Plants... a source of high quality products and outstanding service.

A SIMPLE phone call to your local Texaco Wholesale Distributing Plant will bring you the many benefits of Texaco's vast experience in helping all industry increase production and reduce costs through more effective lubrication.

The Texaco Lubrication Engineer who answers your call works directly with your production men. In assisting them, he not only draws on his own lubrication "know-how," but can also draw on Texaco's varied

experience with industry in all 48 States . . . in plants of every size and type . . . operating under all conditions. He can thus serve you more competently and more successfully!

Use Texaco Products and Lubrication Engineering Service to increase mechanical efficiency throughout your plant. Call your local Texaco Wholesale Distributing Plant, or write The Texas Company, 135 East 42nd Street, New York 17, N. Y.



TEXACO Lubricants, Fuels and Lubrication Engineering Service

Tune in...Texaco Star Theatre every Wednesday night starring Milton Berle. See newspaper for time and station.

SLIP RING MOTORS

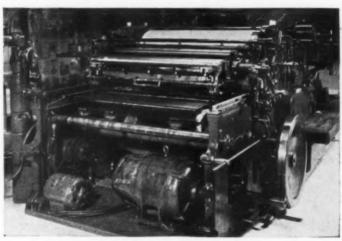
Supply High Torque

Smooth Acceleration

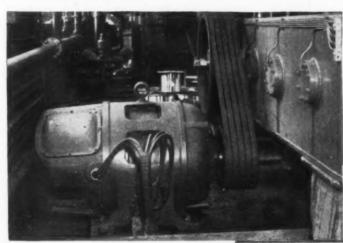
for Applications Requiring...



 40 horsepower Century Slip Ring motor drives crane hoist and 5 horsepower Slip Ring motor drives crane travel.



 10 horsepower Century Slip Ring motor supplies flexible power for a printing press.



75 horsepower Century Slip Ring motor driving wire plant machine.



Adjustable Varying Speeds Torque Control Low Starting Current

Century Slip Ring motors provide flexibility of torque and speed to match varying load requirements of the machines they drive.

Typical applications for these motors are: cranes, hoists, bending rolls, printing presses, wire mills, bridges, mitergates, locks, dams, conveyors, elevators, reciprocating pumps, and other high impact and inertia loads.

If you have machines that require variable speeds or torques — as well as low starting current — specify Century Slip Ring motors.

Century builds a complete line of electric motors, in sizes from 1/6 to 400 horsepower for all popular electric power applications.

Specify Century motors for all your electric power requirements.

CENTURY ELECTRIC CO.

1806 Pine St., St. Louis 3, Missouri



PURCHASING, published monthly, by PEEAYE, INC., subsidiary CONOVER-MAST PUBLICATIONS, INC. Publication Office, Orange, Conn. Editorial and Executives Offices 205 East 42nd St., New York 17, N. Y. Entered as second class matter August 8, 1942, at the Post Office in Orange, Conn., under the act of March 3, 1879. Subscription rates: United States; U. S. Possessions and Canada: \$4 per year, \$6 for two years; elsewhere \$8 per year, \$9 for two years. Single copies 50c. Volume XXV, No. 4

Daniel Boone, Kentucky Frontiersman, escaping by throwing powdered tobacco into Indians' eyes.

The Going was Really TOUGH Then

Yes, and when the going gets tough on grinding jobs, experienced users find they get a quicker and better job with Bay State wheels.

There are definite reasons for this superiority.

- 1. Faster, cleaner, stock-removing action . . . thanks to Bay State's heat resistant bonds.
- 2. Closer "fit" of wheel to the job . . . a result of a more friable type of abrasive with "planned use" grit size combinations.
- 3. Longer wheel life . . . resulting from reduced operator pressure.
- 4. "Non-loading" wheels . . . through a Bay State special treatment process.
- 5. Extra safety . . . with patented Bay State molding of especially designed nut into tapered cup shapes. Buy the best in grinding wheels...buy Bay State!

Branch offices & warehouses Chicago-Detroit Distributors-All principal cities

STATE





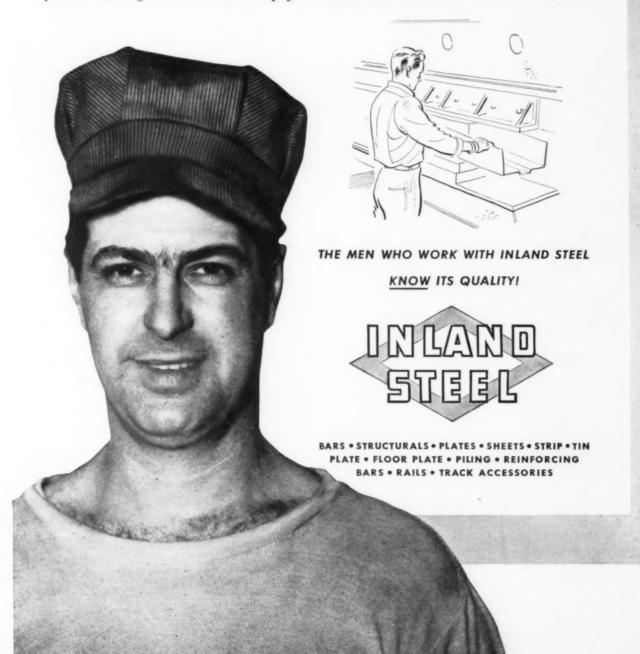
70p Performance Consistently Duplicated

BAY STATE ABRASIVE PRODUCTS CO., WESTBORO, MASSACHUSETTS, U. S. A.

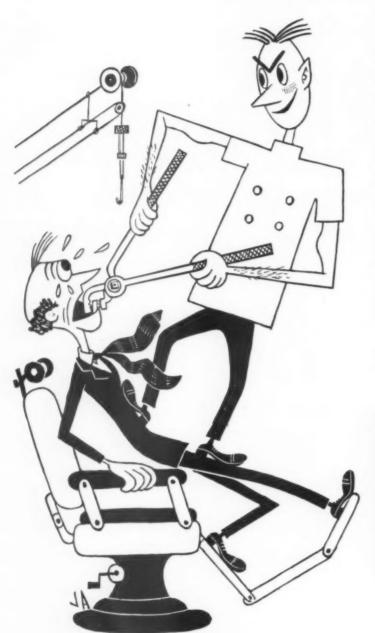
"I like the UNIFORMITY of Inland Steel"

PRESS brake operators know that time and material losses—due to cracking and scoring—rise rapidly when the steel sheets they bend vary in chemical composition, mechanical or surface characteristics. That's why they prefer steel that's uniform . . . steel made by Inland. Uniform source of raw materials, uniform steelmaking procedures using the same modern equip-

ment, uniform workmanship—made possible by Inland's completely integrated, closely knit plant—explain why the Inland Steel received today will be of the same high quality as that received last month...or last year. INLAND STEEL CO., 38 S. Dearborn St., Chicago, Ill. Sales Offices: Chicago, Davenport, Detroit, Indianapolis, Kansas City, Milwaukee, New York, St. Louis, St. Paul.



It's painless when you call us for STAINLESS



Now you can get all the Stainless Steel you need one of our eleven warehouses-the one nearest you.

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And remember, you have complete access to the advice of our engineers in helping you select the grades of U·S·S Stainless best fitted to your particular jobs. Free technical bulletins and booklets detailing the many and varied uses of U·S·S Stainless — also are supplied on request. And we issue an up-to-date *Inventory Bulletin, once a month, which contains a full listing of our Stainless stocks.

So, when you need Stainless-quickly or for your going needs-just call our nearest warehouse. You'll get action!

> * If you use Stainless and are not receiving our monthly Inventory Bulletin, write for it now.



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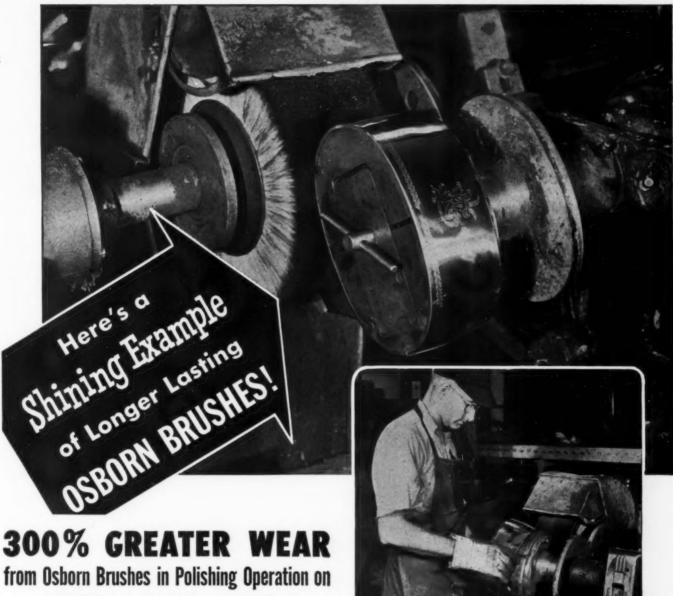
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Westinghouse Steel Toaster Shells

HERE'S a typical example of lowered production costs in a power driven brush operation with Osborn Monarch Tampico Brushes.

The Mansfield, Ohio, plant of the Westinghouse Electric Corporation uses power driven equipment in several finishing operations on electric toasters. Marks in cold rolled steel toaster shells, as a result of a previous polishing operation, are removed by Osborn Brushes in less than a minute.

This brush, with its thousands of tampico fibre cutting ends, reaches all points of the roughened surface and gives a smoother, more lustrous finish than is possible with any other method. The toaster shell is then in an ideal condition for nickel plating.

And outstanding among the many superior features of the Osborn Brushes used on this operation is far longer service life . . . 3 times that of brushes previously used!

If you are interested in cutting costs on metal finishing operations, contact us at once. An informed Osborn sales engineer will provide you with factual data applicable to your power brush problems - without. obligation.

See Osborn's complete line of industrial brushes at the National Metal Exposition, Oct. 25-29, Philadelphia, Pa., Booth 631



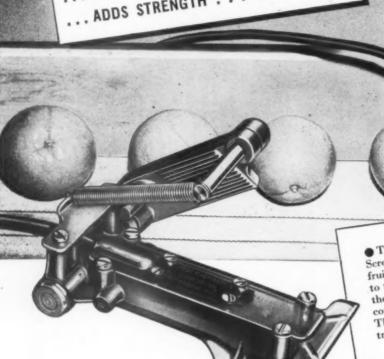
THE OSBORN MANUFACTURING COMPANY 5401 Hamilton Avenue

Cleveland, Ohio

LARGEST MANUFACTURER OF BRUSHES FOR INDUSTRY

COMMON SENSE ASSEMBLY ENGINEERING

Makes "impractical device .. COUNTS OUT 10 TAPPING OPERATIONS ... ADDS STRENGTH . . . ENDS REJECTS



● Ten P-K Binding Head Type "Z" Self-tapping Screws are used in the assembly of this electric citrus fruit counter. Two fasten the sheet metal spring clip to the plastic paddle posts. Four fasten the cover of to the plastic paddle case, and four more attach the counter switch to the inside of the paddle case cover. The paddle case is Tennessee Eastman Corp. clear transparent cellulose acetate.

"This entire unit would have been impractical without P-K Self-tapping Screws" says Food Machinery Corporation, who make this electric citrus fruit counter to speed the packing of oranges after they have been sized.

With machine screws, costly, work-slowing difficulties were experienced in the assembly of the plastic and metal parts. Rejects ran high when holes had to be tapped, and often the device failed when screws pulled out during the counting of as many as 50,000 oranges daily.

By switching to P-K Self-tapping Screws, these problems were quickly overcome. Ten tapping operations were eliminated . . . rejects were a thing of the past. In the words of the manufacturer,

"P-K Self-tapping Screws have much better holding qualities . . . gave the counter the troublefree sturdiness it needed."

Why not gain the benefits of common sense engineering in your product assembly? Question every fastening in your product. Find out if tapping and mold-slowing inserts can be avoided, and product design simplified, by the simpler P-K method.

Call in a P-K Assembly Engineer. In seven out of ten cases, he can demonstrate that P-K Selftapping Screws will save up to 50% in assembly work hours. If you prefer, mail assembly details for recommendations. Parker-Kalon Corp., 200 Varick St., New York 14, N. Y.

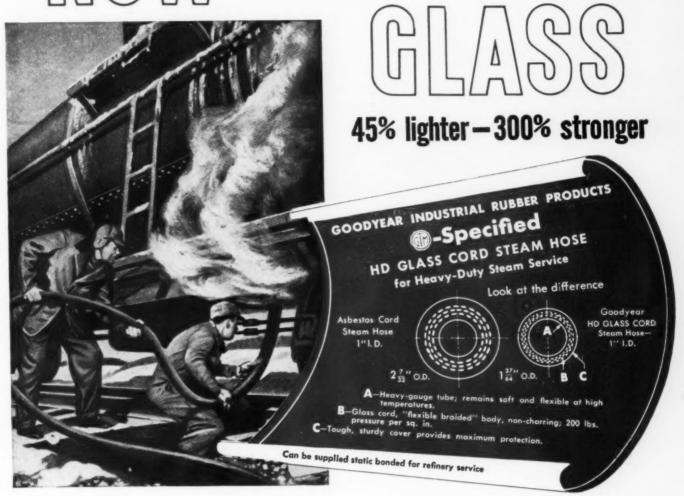
Sold Only Through Accredited Distributors

AND SIZE FOR EVERY METAL AND

PARKER-KALON SELF-TAPPING SCREWS

PARKER-KALON PRODUCTS COLD-FORGED SOCKET SCREWS, WING NUTS, THUMB SCREWS . HARDENED SCREWNAILS AND MASONRY NAILS SHUR-GRIP FILE AND SOLDER IRON HANDLES . METAL PUNCHES . DAMPER REGULATORS AND ACCESSORIES

STEAM HOSE built with



Proved in service — now after more than a year of rigorous field tests Goodyear announces a revolutionary new type of steam hose that sets a new high in flexibility, ease of handling and long life. It is sinewed with glass fiber cord — a new development spun from silk-like filaments of glass, far superior to conventional materials in strength and heat resistance. The result is the finest hose ever offered for mill and foundry service, steam hammers, boiler cleaning, car thawing and other high-pressure steam uses.

What it does — this new Goodyear HD GLASS Cord Steam Hose has proved its ability to carry 200 pounds saturated steam pressure at 388° F. for more than 300 hours under constant flexing. If flexion is slight or use intermittent it will give far longer service. In field use it has lasted months where the best previous hose burst in weeks.

Compare these facts—size for size, this new Goodyear HD GLASS Cord Hose averages 45% less weight and 50% thinner wall gauge than former "beefed-up" types of asbestos cord hose—yet it is 300% stronger! The secret is the glass cord's higher tensile strength and an exclusive new Goodyear "flexible-braided" body construction that gives far greater adhesion, more brawn with less bulk.

How to order — see the G.T.M. — Goodyear Technical Man. Or phone your nearest Goodyear Industrial Rubber Products Distributor, local headquarters for hose, belting, molded goods, packing and tank lining built to the world's highest quality standard.

GOODFYEAR

THE GREATEST NAME IN RUBBER



SPECIALISTS OFF BET

GET BETTER RESULTS



in cooking...

...and in VALVE MANUFACTURE

• High grade restaurants have a tendency to specialize in certain dishes, for which they become famous. This same trend toward specialization has proved its effectiveness in the manufacture of quality valves.

We specialize in one product exclusively—valves for service in corrosive-fluid pipe lines. Concentration in this one field has developed a valuable technological background in this organization that we are glad to place at the service of any manufacturer who has problems relating to valves that must have high corrosion-resistant qualities.

We offer our customers the benefit of long experience in the chemistry of corrosion and contamination, the metallurgy of corrosion-resistant alloys and the designing and manufacturing experience that assures best results in the production of valves that are metallurgically and mechanically correct. Let us discuss your requirements with you.



Aloyco Gate Valve No. 111. This leader of corrosion-resistant valves has double-disc, ball-andsocket type wedges, which are free to rotate and are non-fouling in any position, providing positive clasure at all times.



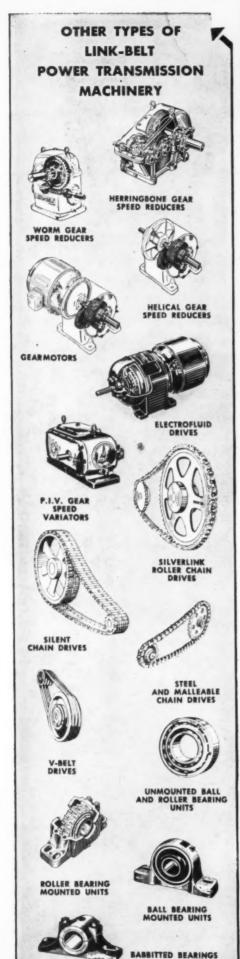
STAINLESS STEEL VALVES AND FITTINGS

SATE, GLOSE, Y, CHECK, TANK, SAMPLING AND V-FORT VALVES
SCREWED AND FLANGED FITTINGS

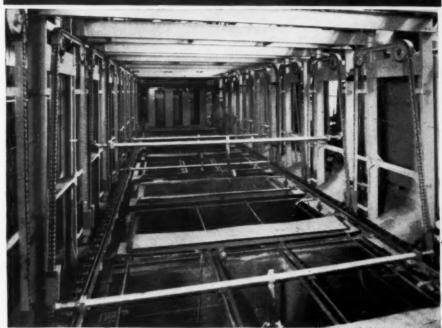
ALLOY STEEL PRODUCTS COMPANY, INC.

1312 WEST ELIZABETH AVE.

LINDEN N



THEY CHOSE LINK-BELT Silverlink ROLLER CHAIN For Strength and Accuracy!



CLEANING AND PLATING PROCESS DEPENDS ON ACCURATE TIMING OF SEVERAL OPERATIONS

From the view shown, it is apparent that chain forms a vitally important part of the Meaker plating machine illustrated. And because the satisfactory operation and long life of the equipment depends largely on the strength and accuracy of the chain, The Meaker Company selected Link-Belt Silverlink Roller Chain in various sizes, for their purposes.

Work in process is suspended from horizontal bars, riding on horizontal bus bars, and engaging parallel strands of Link-Belt "SS" roller chain, which propel the work across the tank. Transfer from tank to tank is done by loops of #120 Silverlink Roller Chain trained around four sprockets with special carrier cups for lifting the bar from one tank and lowering it into the next one. The lasting precision of Link-Belt chains maintains accurate timing — so essential to the functioning of this machine.

Link-Belt roller chains and sprockets are noted for their precision manufacture and long life. Link-Belt chain specialists can aid you in applying this flexible, positive, economical medium to your conveying and power transmission requirements.

LINK-BELT COMPANY

Chicago 9, Indianapolis 6, Philadelphia 40, Atlanta, Dallas 1, Minneapolis 5, San Francisco 24,
Los Angeles 33, Seattle 4, Toronto 8.

Offices, Factory Branch Stores and Distributors in Principal Cities.

11,145



Power Transmission Machinery

Spring Worries?

Our Factory-Trained Field Men Are Near You...



When your spring procurement problems indicate the need of a specialist at your elbow, send out a call for one of our 38 trained men constantly in circulation in the industrial field. With coverage like this, you will get prompt if not immediate action.

This is one of the many good reasons why it pays to do business with this alert group of seven spring plants.

SPRINGS SMALL STAMPINGS WIRE FORMS

ORIGINAL DIVISIONS OF ASSOCIATED SPRING CORPORATION

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COMPANY

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GAOO MILLER AVE DETROIT II, and ANN ARBOR, MICH.

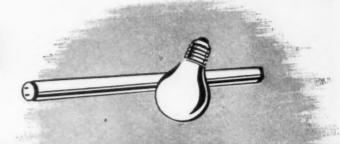
.... AND DUNBAR BROTHERS COMPANY DIVISION, BRISTOL, CONN.

OHIO DIVISION, 1712 EAST FIRST STREET, DAYTON, OHIO

IN CANADA, THE WALLACE BARNES CO., LTD., HAMILTON, ONT.

YOU CAN BE SURE

that Westinghouse lamps are of the highest quality



YOU CAN BE SURE

that Westinghouse warehouses and distribution assure prompt and efficient service



AND YOU'LL NEVER
DO BUSINESS
WITH NICER
PEOPLE

We aren't bragging about ourselves, but we ARE proud of the top-notch distributors who handle our products and who realize that customers like you deserve the best kind of personal sales attention. The next time you need any type of lamp in any quantity, call your Westinghouse Lamp Distributor.* Lamp Division, Westinghouse Electric Corp., Bloomfield, N. J.

*FOR THE NAME OF YOUR
WESTINGHOUSE LAMP DISTRIBUTOR
WRITE THE NEAREST WESTINGHOUSE
LAMP DISTRICT OFFICE:

 Westinghouse
THE NAME YOU KNOW IN AMADO



- ☐ 1. WORK GLOVE—Circular describes the Sureseal treated Fibre-bonded work glove which maker states saves up to 40% of glove replacement come. Special treatment of the palm is said to produce high resistance to abrasion, snagging and wear and to strengthen fibres, seams and stitching. Surety Rubber Co.
- ☐ 2. MATERIALS HANDLING—Booklet describes assortment of heavy duty equipment for loading, lifting, hauling, scooping, pouring, bull-dozing, "Foldaway" lift truck which handles 6000 lb. loads, the Scoopmobile, and also the Mixermobile which is a portable concrete mixing plant. Mixermobile Manufacturers.
- ☐ 3. SHOVELS. SPADES, SCOOPS—Catalog H 1947 illustrates and describes The Wood Shovel and Tool Company's line of superalloy brand shovels, spades and scoops with blades of molybdenum alloy steel, heat treated. The moly blades are lightweight, yet super strong and super tough.
- ☐ 4. WELDING—Automatic welding torches which the maker states save oxygen, acetylene and labor and insure better welds, are the subject of printed matter issued by the Harris Calorific Company.
- □ 5. BALL JOINTS—Catalog of 16 pages describes standard types and sizes of ball joints and provides data on special types. J. J. Tourek Míg. Co.
- ☐ 6. BRUSHES—Catalog describes the Michigan Brush Manufacturing Company's line of maintenance and industrial brushes, and also assortment of paint brushes.
- ☐ 7. PACKAGING—Booklet on the subject of precision Packaging has been published by Robert Gair Company, makers of paperboard, folding cartons and shipping containers.
- ☐ 8. SOCKET SCREW PRODUCTS—New

stock list covering its line of socket screw products—hollow set screws, socket cap screws, hollow pipe plugs and stripper bolts, has been issued by the Brighton Screw & Mfq. Co.

- g. LABELS, NAME PLATES, etc.—Illustrated book shows hundreds of embossed metal name plates, labels, seals, decorations and string tags made by The Angell Manufacturing Co.
- ☐ 10. ELECTRICAL—Capacitors, contacts, rectifiers, resistors, switches, vibrators, welding tips and holders and special products are the subject of Manufacturer's Catalog No. 1 issued by P. R. Mallory & Co., Inc.
- ☐ 11. VALVES—Iron body valves are the subject of bulletin 106; valves are available with screwed or flanged ends. Among advantages cited are reduction of fluid turbulance to a practical minimum, seat rings screwed into body, brass liner on glands which assure greater resistance to corrosion and scoring, etc. Walwerth Co.
- ☐ 12. WORK CLOTHING—32-page catalog illustrates and gives details of the Advance Glove Manufacturing Company's different types of work gloves—cotton and leather, welder's gloves, wire-stitched gloves—and saiety and protective clothing.
- ☐ 13. ROTARY PUMPS—Bulletin describes the Worthington GA rotary pumps—small pumps for handling hot, cold, thin or viscous liquids. Worthington Pump & Machinery Corp.
- ☐ 14. ELECTRIC FANS—Exhaust and Ventilating Bulletin No. T-51 has been issued by Emmerson Electric Manufacturing Co., covering electric air circulators and exhaust fans.
- ☐ 15. BROACHING—Catalog PB48 contains complete description of different types of broaches and machines and explains the

uses of the different types. American Broach & Machine Co.

- ☐ 16. MILLING MACHINES, LATHES—Bulletin M 48 covers the complete line of standard Sundstrand Milling machines, and Bulletin T-48 tells about the entire line of Sundstrand automatic lathes. Sundstrand Machine Tool Co.
- ☐ 17. PORTABLE ELECTRIC TOOLS—Literature describes features of portable electric tools made in England by S. Wolf & Co., Ltd., along with price and delivery information. Included are lightweight production and standard duty drills, heavy duty all ball-bearing screwdriver, 6" hand grinder, 7" sander, a blower, chisel mortiser, and hammer kits.
- ☐ 18. MOTOR TESTING—Catalog contains a complete description of the Sun Electric Corporation's scientific motor testing equipment, which easily and accurately tests compression, ignition and carburetion.
- ☐ 19. "SMALL PARTS"—Lock and flat washers, stampings, snap rings, finishing washers, hose clamps, welded parts and assemblies, and retaining rings are the subject of booklet "Small Parts for Better Production" published by George K. Garrett Co., Inc.
- ☐ 20. STAINLESS STEELS—Stainless Pipe and Tubing is the title of new 24-page Frasse manual of useful data on stainless steel tubular products. It includes type characteristics, physical properties, fabricating data, tolerances, standard finishes, corrosion resistance, and other essestial information. Peter A. Frasse & Co., Inc.
- ☐ 21. ADHESIVE TAPES—Catalog describes the Bauer & Black line of industrial adhesive tapes, outlining the qualification and merits of specific tapes for specific uses.
- ☐ 22. GAUGES—Folder describes line of gauges made by the United States Gauge Company—all purpose pressure, chemical, boiler, welding, hydraulic, refrigeration and other types.
- ☐ 23. COUNTERS—Eight-page catalog describes counters for mechanical, electrical and manual operations, including the Small Reset counters which can be readily built into an almost endless catalog of machines and products. Veeder-Root Inc.
- ☐ 24. SAMPLE ELECTRODES—Three sample rods of Ampco-Trode 10 aluminum bronze electrode in one diameter—your choice of 3/32, 1/8, 5/32 or 3/16, will be sent to you by Ampco Metal, Inc. Purpose of offer is to enable user to prove by use, the versatility of this bronze rod which will weld cast iron, and iron copper and nickel-base alloys as well as dissimilar metals.
- ☐ 25. TAPS—Handbook for Users of Taps is title of practical booklet distributed by Charles H. Besly Co.
- ☐ 26. WELDING FITTINGS—"Dimensional Data and Weights of Tube-Turn Welding Fittings" is self-explanatory title of folder distributed by Tube Turns, Inc.
- ☐ 27. BITS, SOCKETS—Two catalogs— No. 20 describes bits for clutch head, slotted, socket or hex head screws, and No. 19 gives (Please turn to page 16)

ASK "PURCH" FOR THIS FREE, UP-TO-DATE LITERATURE Four Pages — 14-16-19-20

Use convenient prepaid postcards on pages 19 & 20

Subject: FILES FOR DIE CASTINGS

references.

Preserved by Nichelson File Co.



Mill Bastard Die Cast File



0

Half Round Die Cast File



Filing a Die Casting

FUNCTION OF DIE CAST FILES. Die castings of aluminum, magnesium or zinc alloy present special problems under which regular purpose files do not stand up as they should when removing webs, fins and flashing, or filing thin sections, sharp corners and edges. Regular purpose file teeth also have a tendency to clog up rapidly.

While Nicholson and Black Diamond Die Cast Files have the same number of teeth per inch as the regular Mill Bastard file, their teeth are specially shaped and sharpened to cut fast and without excessive clogging. Die Cast file teeth are also made extra strong on sides and edges to prevent their "shelling off" or "breaking out" under severe use against obstinate fins, corners or other projections.

POPULAR TYPES OF DIE CAST FILES. The Nicholson or Black Diamond Mill Bastard Die Cast File is single cut. The Half Round is double cut on its rounded side as well as on its flat side, thus permitting comparatively fast stock removal. But since it is made in Smooth instead of Bastard cut, it also produces a good finish.

HOW TO USE DIE CAST FILES. Light to medium pressure should be applied in filing small die castings; medium to heavy on large ones. A right-toward-left stroke generally should be used.

IDENTIFICATION AND SIZES. Nicholson and Black Diamond Die Cast Files are stamped "Die Cast" on tang. Regularly furnished in Mill Bastard and Half Round in 6", 8", 10", 12" and 14" lengths through your industrial distributor.

Nicholson makes special-purpose files for Brass, Lead, Aluminum, Stainless Steel, Foundry Castings, Die Castings, Die Making, Lathe Filing, Curved and Shear Tooth Filing—and Swiss Pattern files of all shapes and patterns.

FREE 48-PAGE BOOK, "FILE FILOSOPHY," tells about all of them, and includes valuable information about files in general. Send for it.



NICHOLSON FILE CO., 28 Acorn St., Providence 1, Rhode Island





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(Continued from page 14)
full dimensional data and prices on sockets
—plain, adapters, wrenches, drivers, etc.
The Apex Machine & Tool Co.

- ☐ 28. HOISTS—Catalog P-11 describes the Harrington Company's Peerless hoists, which includes electric, differential, lever and trolley types.
- ☐ 29. METAL SAWING—New price list gives full descriptions, sizes and weights of the Griffin Hack Saw Blades. John H. Graham & Co.
- ☐ 30. BLOWERS, EXHAUSTERS—Bulletin B-5 describes centrifugal type blowers and exhausters for air or gas at constant pressure; units are highly efficient for agitation and aeration, gas manufacture, combustion processes, cooling and ventilation and all low pressure and vacuum requirements. Allen-Billmyre Divn.
- ☐ 31. WELDING—Amsco Welding Products Bulletin 1047-W gives complete information on American Manganese Steel Divn. welding products, for reclamation and hardfacing.
- □ 32. PLASTICS—Here's a book you should have on plastics, for among other things it includes a discussion on "How to Buy Plastic Parts", engineering information with charts and tables and other information important to plastics buyers. It also includes full color reproductions of engineering jobs molded by Amos Molded Plastics, and their services for finishing molded plastics in mass production quantities.
- □ 33. FASTENERS—Stainless steel machine screws and rivets, cap screws, bolts, washers, nuts, wood screws, cotter pins, socket screws, wing nuts, etc., are the subject of Allmetal Screw Products Co. catalog.
- ☐ 34. LIFT TRUCKS—Bulletin M describes the Hydroelectric 'K' lift truck, hand lift trucks, and two tractors made by Lift Trucks Inc.
- ☐ 35. MATERIAL HANDLING—Catalog 7-11 describes the Mercury Fork Truck, tractors, trailers, lift trucks and the "Trackless Train." The Mercury Manufacturing Co.
- ☐ 36. PACKING, SEALING—Vistex, new type of packing, sealing and wiping material which resists attack by tricresyl phos-

phate, is the subject of Data Sheet No. 14 issued by American Felt Co.

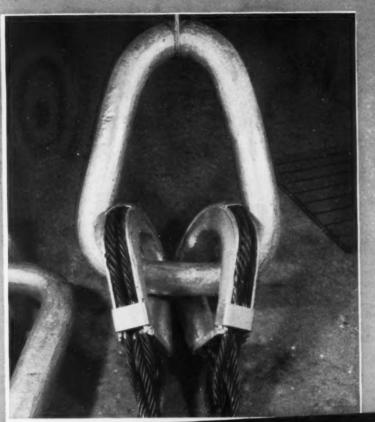
- ☐ 37. INDUSTRIAL HOSE—Bulletin 6879-A describes Condor Homo-Flex hose for air, water, high pressure spray, etc. Raybestos-Manhattan Inc., Manhattan Rubber Divn.
- ☐ 38. GRINDING WHEELS—Grinding Wheel Data Book, 112 pages, contains practical information about grinding wheels and their uses. There's a size and shape for every grinding job. Simonds Abrasive Co.
- ☐ 39. FLOOR MAINTENANCE—Handbook on how to care for floors, entitled "Floors Without Flaws—Modern Maintenance Methods" for wood, linoleum, rubber, terrazzo, concrete, tile, cork, composition and marble is being distributed by A. C. Horn, Inc.
- 40. COLD-HEADED SPECIALTIES—Catalog covers special nails, rivets, screws and other threaded parts made by John Hassall, Inc.
- ☐ 41. INDUSTRIAL CLEANING—Manuals and technical bulletins describing 418 laborsaving cleaning operations in 23 industries, have been published by Turco Products, Inc.—yours for the asking; check No. 41 on the postal.
- ☐ 42. POWER HACK SAW—Folder describes the Keller Power Hack Saw which is made in eight standard models; features include automatic lift on reverse stroke, swivel vise, chip-free coolant pump, etc. Sales Service Machine Tool Co.
- ☐ 43. SHAPER—Folder tells about 8" Hy-Duty Shape-Rite shaper, which maker states is engineered to provide faster set-ups. Shaper is available with plain or swivel table. Sales Service Machine Tool Co.
- ☐ 44. VALVES—Catalog No. 51 gives detailed information about Cooper certified stainless steel valves. The Cooper Alloy Foundry Co.
- ☐ 45. BELT FASTENERS—Three bulletins give complete information on belt fastening; F-100 tells how to fasten and repair conveyor belts; V-205, complete information on V-belt fasteners; A-60, fastening and repairing transmission belts. Flexible Steel Lacing Co.
- ☐ 46. TUBING—Technical Bulletin 6-E, 147 pages, gives up-to-date metallurgical and application data on steel tubing for high-

pressure, high-temperature services. The Babcock & Wilcox Tube Co.

- ☐ 47. OPEN STEEL FLOORING—Bulletin KH1140 describes the construction features of Tri-Lok open steel flooring. Diagonal, or super-safety U-type flooring and stair treads of all types available. Dravo Corp.
- ☐ 48. SLEEVE BEARINGS—Catalog describes Johnson Bronze company's stock sleeve bearing service—cast bronze, plain, graphited or babbitt-lined, steel and babbitt; steel and bronze, powdered bronze, rolled bronze and aluminum alloy.
- ☐ 49. STEEL GRATING—Paper-weight-size sample of Blaw-Knox electroforged steel grating, featured by maximum open area, easy maintenance, and self-cleaning, will be sent to you by Blaw-Knox Division.
- ☐ 50. SHOP EQUIPMENT—Foremen's desks, tool stands, work benches, stools, chairs and trucks are subject of new Hallowell catalog. Standard Pressed Steel Co.
- ☐ 51. LAMINATED PLASTICS—Textolite laminated plastics for panels, low voltage applications and other uses, are the subject of new G-E bulletin which lists grades, properties, fabricating instructions and other data. Chemical Dept., Gen. Electric Co.
- □ 52. TOOLS—New Armstrong General Catalog D-48, especially designed for the convenience of purchasing departments, covering wide assortment of tools ranging from tool holders, to lathe and screw machine tools, machine dogs, clamps, drills, wrenches, pipe tools, bits, blades and cutters, has just come off the press. Armstrong Bros. Tool Co.
- ☐ **53. MOTORS**—Bulletin MU-185 gives complete information on the Wagner Electric Company's line of motors.
- ☐ **54. CUTTING FLUIDS**—D. A. Stuart Oil Company has issued booklet entitled "Cutting Fluids for Better Machining" that you may be much interested in.
- ☐ 55. HOISTS—Folder ZSP-4 describes Coffing Hoist Company's line of hoists, which includes Safety-Pull hoist, Hoist-Jack, Mighty-Midget puller, Quik-Lift electric hoist, and other equipment.
- ☐ 56. STEAM TRAPS—Circular 259-A describes "Cub" open bucket type steam traps whose qualities include: double rating on continuous discharge, no waste of steam, stainless steel valves, seats and buckets, easy installation, and water seal entirely within the trap. Wright-Austin Co.
- ☐ **57. UNIVERSAL JOINTS**—Catalog describes Mechanics Roller Bearing Universal Joints for cars, trucks, busses and industrial equipment. Mechanics Universal Joint Division.
- ☐ 58. WASHERS AND STAMPINGS—That is the title of pocket edition catalog which contains 46 pages of descriptive material, including illustrations of many of the more than 22,000 dies available at plant of the Wrought Washer Mfg. Co.
- ☐ **59. CARBIDE TOOLS**—Reamers and other carbide tools are the subject of bulletin issued by the Super Tool Co.
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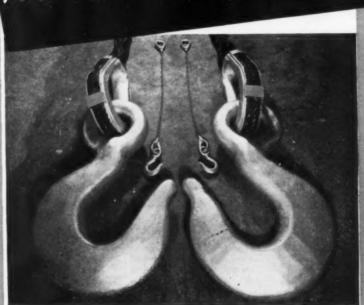
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The above unretouched photographs show the largest and smallest Macwhyte Slings catalogued. The two large hooks have a combined safe working load of 180,000 pounds. The two small hooks have a combined safe working load of 2400 pounds—based on a safety factor of 5.

(The top photo is the upper assembly of the same sling.)

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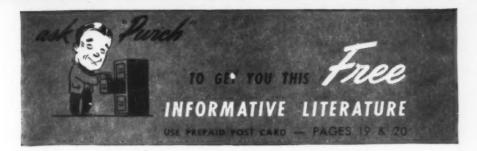
The new Yale Scale mechanism with exclusive Magnetrol feature that controls weighing accuracy. Other features include fixed center construction that prevents misalignment of parts, positive mechanism locking device that protects parts against damage, and draft bands of a new alloy metal that will not rust, corrode, kink or break

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(Continued from page 16)

Failure" is the title of 28-page guide to valve economy, with case histories of valve damage and recommendation for its prevention. Tenkins Bros.

- 61. COPPER BASE ALLOYS-New 52page manual entitled Copper Base Casting Alloys published by Federated Metals, Divn. American Smelting and Refining Co., deals rather extensively with the practical application of copper-base metallurgy. It also includes a compilation of standard industry specification tables—ASTM, AMS, SAE, Federal Government and U. S. Navy. Thermal Effects, Shrinkage Text covers Porosity, Gas Porosity and various behavior characteristics of high copper alloys, tin bronzes and red brasses, yellow brasses, manganese bronze, nickel silver, aluminum bronze, silicon bronze and silicon brass.
- ☐ 62. PUMPS—Bulletin PCV describes line of constant volume pumps from 1/4 to 20 fpm, based on 1200 rpm. Pumps incorporate the "Rota-Roll" principle and pumping members which produce more efficient inlet port conditions, a reduction in cavitation, a quietly operating pump and longer pump life. Sundstrand Hydraulic Division.
- 63. HARD SURFACING ELECTRODES-The Page Steel & Wire Divn. of American Chain & Cable Co. has published booklet DH 45 about hard surfacing electrodes each of which has been developed to provide a weld metal deposit suited to definite welding application. Among these is the Man-ganese Nickel Shielded Arc Electrodes which normally does not contain free carbides, and is air toughening.
- 64. BRUSHES—56-page catalog illustrates and describes brushes of all types for painting, cleaning, maintenance and indus-irial uses. David Linzer & Sons, Inc.
- 65. AIR HOSE-Highflex lightweight air hose for small pneumatic tools is subject of picture and text in broadside released by

- B. F. Goodrich Co. Hose is as "flexible as a lamp cord.
- 66. DEBURRING-FINISHING-Illustrated manual describes the Roto-Finish mechanical deburring and finishing method and equipment, explaining the four principal procedures-deburring and grinding, polishing, britehoning and coloring. The Sturgis Producis Co.
- ☐ 67. PILLOW BLOCKS—SKF Industries, Inc. has issued an abridged edition of its general catalog on ball and roller bearings that includes a special section dealing with the various types and sizes of pillow blocks and data on their mounting, lubrication and maintenance. The 76-page booklet also covers load calculation, selection of shaft and housing tolerances and conversion tables.
- ☐ 68. DECALS—New 16-page two-color booklet describes PF Decals for wide variety of products, window, truck, packaging, trade-marking and other uses. Palm, Fechteler & Co., Inc.
- 69. HEAT EXCHANGERS—Shell and Tube Heat Exchanges and allied equipment for all industries are the subject of bulletin No. 4300 issued by Ross Heater & Mig. Co., which opens from 8½" x 11" file size to 25½" x 19½" broadside showing the company's entire line.
- 70. FILING ROOM TOOLS-"Tools for the Filing Room" is subject of 60-page book just released by E. C. Atkins & Co. It contains suggestions for the use and care of large and small circular and wide and narrow band saws, and four pages are devoted to welding band saws.
- 71. CONTROLS Controls for air, water, steam, natural manufactured and liquefied petroleum gases, light and heavy oils, etc., refrigerants, etc., are the subject of Catalog and Service and Instruction manuals issued by General Controls.

- 72. BOND PAPER-First Correct Bond sample book since the war which contains 24 sheets of the samples offered by Correct Bonds and lists the special finishes available, is being distributed by Howard Paper Mills, Inc., Aetna Paper Co., Division. Book consists of samples of all available standard weights in eight colors and white, and also ivory, substance 20.
- 73. MILLING MACHINE—No. 2 Universal Milling machine, 5 horsepower, in new design, is the subject of recent Brown & Sharpe Mfg. Co. bulletin of 16 pages of text and illustrations.
- ☐ 74. BRONZE DIE METAL—Bulletin No. 96, "Ampco for Forming and Drawing Dies", in addition to grades 21 and 22 for forming and drawing material, describes a new bronze die alloy, Grade 24, which is said to be decidedly superior from performance cost reduction standpoints. Ampco Metal, Inc.
- 75. QUICK SETTING GLUE—A quick setting, room temperature urea resin adhesive for the woodworking industry, named Colpres 10, is subject of bulletin issued by Timber Engineering Co. It sets at room temperature-75 deg. F. and is said to be water resistant, non staining and of great strength. Parts glued are ready for machining in 10 minutes shear strength 500 psi.; by pre-heating the wood to 180 deg. F., a clamping time of 2 minutes may be Ultimate strength is reached in 24
- 76. INDUSTRIAL GLASS PRODUCTS—Signal, Technical, and Industrial. New 24page bulletin issued by Kopp Glass, Inc., covers glass products including color filters, industrial lenses, instrument covers, sight glasses, signal lenses, etc.
- 77. SILICONE MOLD RELEASE—Pamphlet describes Dow Corning Silicone Mold Release fluid for rubber and plastics. Information on general properties is presented as well as major applications in the fields of lubricating tire molds and curing bags, and in the lubrication of mechanical rubber goods, floor tile, and plastics.
- 78. SOLDER—Solder bulletin issued by Division Lead Co., cites points to consider in determining solder grade and size for a given job, melting points and feet per pound of various sizes and grades; included also are illustrations of Solder Saver Snap-On metal covers used on one-pound spools.

(Please turn to page 20)

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(Continued from page 19)

- 79. MICROSCOPE—New folder describes Wilder Toolmaker Microscope. Full specifications and dimensions and a table showing the coordinate measurements possible gre included. George Scherr Co.
- 80. HEAT RESISTANT FINISH-Circular describes Mico, modified silicone aluminum heat resistant finish which maker states retains adhesion and film integrity at high temperatures. The finish is claimed to have withstood extreme temperatures up to 1000 deg. F. over protracted periods without surface breakdown. Midland Industrial Finishes Co.
- 81. PLATING & PROCESSING-Booklet illustrates the types of laborsaving, conveyorized automatic and semi-automatic plating and processing equipment built by the Meaker Co.
- 82. PISTON PACKING—Bulletin W*404-B3 describes cup-type piston packing molded of duck and synthetic material for pressures up to 350 psi; temperatures up to 250 deg. F.—other materials available. Worthington Pump & Machinery Corp.
- 33. NON-SLIP SURFACING-Brochure describes Non-slip "Safety-Walk" surfacing for floors, decks, catwalks and ramps. It consists of hard mineral grains surface-coated on toughened fabric, which affords nonslip safety underfoot "no matter how much oil, grease or water spills on it." It is made in red, green, silver and natural black. Minnesota Mining & Mig. Co.
- ☐ 84. SILICONE PRODUCTS.—Illustrated bulletin CDR-57 describes in detail G-E silicone products, including silicone resins, oils, greases, water repellents, and rubber, together with their many industrial uses. General Electric Co., Chemical Department.
- 85. DIE HEAD-Bulletin No. 5 describes & G general purpose self opening die heads which use hobbed chasers. The Eastern Machine Screw Corp.

- 86. SAFETY EQUIPMENT-New 64-page catalog issued by the Chicago Eye Shield Co. gives complete buying data on cup goggles, welding goggles, welding helmets. face shields, respirators, masks, hoods and protective aprons and sleeves.
- □ 87. HAND TRUCK—Bulletin describes the Wheel-Ezy with new zero pressure hollow core rubber wheel, which is available in four models. The Rapids Standard Co.
- 88. DIE CASTING MACHINE—Bulletin describes the Model 200 diecasting machine for aluminum, magnesium or brass, which with simple change of hot metal end may be used for casting zinc, tin or lead. Cleveland Automatic Machine Co.
- 39. NYLON, FIBERGLAS Fabrics-Bulletin describing the use and physical values of nylon and fiberglas fabrics, is accompanied by swatches of each fabric. This is a very interesting bulletin. The Duplan
- 90. WELDERS-Air-operated standard 30 and 50 KVA rocker arm welders for high production spot welding of a wide range of light to medium-duty applications, are the subject of Bulletin 702 published by Progressive Welder Co.
- 91. PRESSES—Hydraulic presses for straightening both rough and finished work are the subject of Bulletin PS-48. It also describes straightening press with a 75 ton capacity and a 12 inch stroke. Colonial Broach Co.
- 92. CEMENTED CARBIDE TOOLS-New catalog No. 48 by text and illustration covers the complete, diversified line of cemented carbide tools made by Kennametal Inc.
- 93. BOTTLE LABELING-Two-color, sixpage Technical Service Bulletin on Bottle Labeling Adhesives, application techniques and label selection data, is being offered by Paisley Products, Inc.

- 34. WHITE FIR-White fir of the Western pine region, its properties, uses and grades is the subject of 56 page booklet, AIA File 19, announced by Western Pine Asso-Several full-page illustrations clearly portray the grades.
- 95. MACHINE TOOLS New general catalog illustrates and gives detailed information about milling, broaching, cutter sharpening, grinding, lapping, flame hard-ening and other machines made by Cin-cinnati Milling and Grinding Machines, Inc.
- 96. PULLEY PULLER—Circular describes hydraulic pulley puller designed for removing gears, pinions, pulleys, couplings, sheaves, bearing housings and other objects from shafts. It is adjustable in height and spread. Industrial Engineering Equipment
- 97. WIRES, CABLES—New catalog 10-F, 96 pages, details the Rockbestos Products Corporation's complete line of more than 125 different heat and flame resistant wires, cables and cords of standard construction. The separate sections are tabbed for ready reference.
- 98. SCIENTIFIC INSTRUMENTS—Illustrated catalog of 640 pages of scientific instruments, laboratory supplies, and reagent chemicals, chemical glassware, accessories, microscopes, ovens, incubators, stills, etc., is available without cost to industrial or edu-Williams, Brown & cational institutions. Earle, Inc.
- 99. ELECTRODES-40-page electrode catalog which among other things contains an electrode selector chart, is announced by Wilson Welder & Metals Co., Inc.
- 100. TUBES AND PIPE—Bulletin on B & W Croloys giving technical data on high-temperature steels for alloy tubes and pipe, has been published by the Babcock & Wilcox Tube Co. It offers condensed information in chart form on such factors as creep strength, short time tensile strength, oxidation and corrosion resistance, temper embrittlement and minimum physical prop-
- ☐ 101. TUBE EXPANDERS—New Ideal Bulletin No. 61 released by The Gustav Wiedeke Co., Small Tools Department, illustrates and lists adjustable tube expanders developed especially for rolling small tubes in thin, thick and multiple tube sheets of condensers, coolers, air conditioners, heat exchangers, etc.

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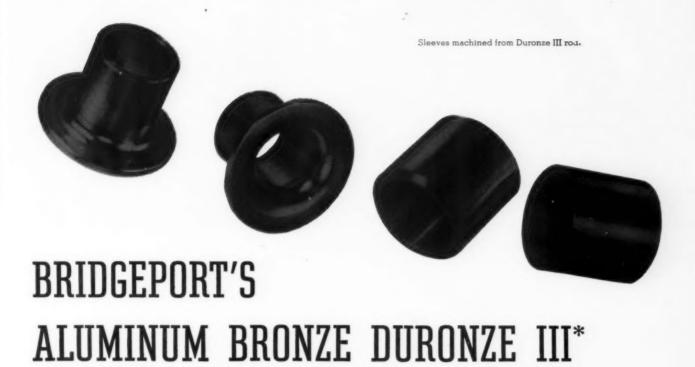
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Low friction against steel makes Bridgeport's Duronze III (silicon aluminum bronze) ideal for sleeves and bushings for slow speeds where minimum wear is desired. Its high strength and good wear resistance maintain precision of thrust and radial bearing surfaces for accurate tool performance. However, Duronze III is not recommended to replace bearing metals. Consultation with our Laboratory is advisable before it is used for such an application.

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Duronze III is ideal for the manufacture of sleeves and bushings, gears and pinions, valve stems and screw machine products such as screws, bolts, nuts, etc., and for forged or cast valve bodies where high strength and corrosion resistance are important. For further information on the productimproving possibilities of Bridgeport's engineering alloys, contact the nearest Bridgeport office.

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More for your money with STANDARD

GENERAL ELECTRIC is now producing definite-purpose motors, such as oil-burner motors, jet-pump motors, hermetics and the others shown below, as well as 11 types of general-purpose motors. These are being made in standard designs. Ratings, performance standards, dimensions, and special features (such as type of enclosure, bearings, etc.) follow the standards worked out by the National Electrical Manufacturers Association in conjunction with your industry associations. Thus, you get all the advantages of standardization and —over 1600 G-E standard motors to choose from.

A Recent Bulletin You'll Want. A brief, but concise G-E bulletin tells what the standards are and how they



Fractional-Horsepower MOTORS

are applied. Ask your local G-E office for Bulletin GES-3565 or write Apparatus Dept., General Electric Company, Schenectady 5, N. Y.

Lower Prices are Proof. Increased production costs made it necessary for General Electric to adjust its prices upwards in June of this year. However, prices on fractional horsepower motors are still 5% lower than they were in December, 1947 due to two successive price reductions this year both of which were direct results of the standardization program. With fewer motor types to build, G.E. has been able to concentrate on those motors most widely demanded. The resulting savings are passed along to you and your customers in the form of worthwhile price reductions.



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Oil Burner MOTORS

This compact, clean-lined oil-burner motor is a splendid example of small-motor standardization. A standard fractionalhorsepower motor designed specifically for use on domestic oil burning equipment, it gives the burner manufacturer all the special features he needs.

Compactness plus the two-lug flange mounting (NEMA standard) with concealed through bolts help give the heating plant a trim, modern appearance.

Positive protection from harmful overloads is assured by a built-in, manual reset Thermo-Tector.

Quiet operation and long service life are obtained by the use of split-phase design. Split-phase motors are simple in construction; they have no brushes or commutators. They give many years of service with a minimum of maintenance. They are very quiet in operation.

Rigidity combined with light weight results from the use of welded, rolled-steel stator-frame construction.

General Electric oil burner motors are available in ratings of 1/12, 1/8, and 1/6 hp for operation on 115 or 230 volts, 60cycle a-c. Full load speed is 1725 rpm. They are also available in ratings of 1/8 and 1/6 hp on 115 or 230 volts, 50-cycle a-c. Full load speed of these motors is 1425 rpm. All G-E oilburner motors meet the requirements of the Underwriters' Laboratories, Inc. for this service. For further information call vour nearest G-E field office.

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General Purpose



Sandpaper in the Kitchen

THE BOILED EGG YOU HAD FOR BREAKFAST THIS MORNING WAS PROBABLY CLEANED UP BY JEWELITE ABRASIVE CLOTH. A FINE-GRIT CLOTH, CUT IN SPECIAL SHAPES OR MADE INTO BANDS, HAS BEEN ESPECIALLY DESIGNED FOR THIS DELICATE JOB, AND IS USED BY MANY POULTRY FARMS. THIS IS ONLY ONE OF THE UNUSUAL SANDING PROBLEMS THAT AP ENGINEERS HAVE SOLVED.

AND THE WOODEN BOWLS FOR THE CHEF'S TOSSED GREEN SALAD ARE GIVEN THAT SMOOTH INSIDE FINISH WITH JEWEL GARNET. MANUFACTURERS HAD BEEN TROUBLED BY UNEVENNESS AND GOUGED EDGES. AFTER SWITCHING TO JEWEL GARNET BELTS, WITH THE EXCLUSIVE VELVET JOINT, THE PROBLEMS DISAPPEARED AND PRODUCTION WAS DOUBLED.





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Whatever your packaging needs may be

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Investigate today what added color can do for your product package. Send your product and present package to Old Dominion's Design Service, Department 99.





HERE is a piston packing that actually takes advantage of the fluid pressure built up in reciprocating pumps and in air or hydraulic mechanisms. The illustration above shows how Darcova Pumcups utilize this pressure . . . how they hug the cylinder wall on every work-stroke of the piston, preventing needless slippage.

Then, too, friction between the Pumcup and cylinder is automatically "pressure-equalized" all the way around for a uniformity of wear otherwise impossible. And, in contrast to other types of packing, fluid slippage does not increase with wear. Peak volumetric efficiency is retained even when Pumcup wear is far advanced.

Consequently, Pumcups offer two mighty Important advantages. First, downtime and material and maintenance costs are cut to a fraction because Pumcups outlast other types of packing many times over. Secondly, volumetric efficiency is held constant.

Everything considered, it is easy to see how thousands of Darcova Pumcup users are saving up to \$100 per pump per year. Easily installed, Pumcups replace ordinary packing in reciprocating pumps and in air or hydraulic mechanisms. They are precision built in ½ to 42 inch sizes and in many different textures for practically all fluids, pressures and temperatures.



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TURRET LINE Fluorescent Fixtures

The addition of new RLM Turret* Socket Fixtures with 5-inch lamp spacing to the Wheeler Turret Line, now makes "Skilled Lighting" available in this most modern, efficient type of fixture for any industrial lighting requirement.

The new Wheeler 5-Inch Turret Line Units are designed to dimensions that afford uniformity in installation with previous Wheeler Units. Made for two and three 40-watt lamps . . . in single or double length . . . with open or closed end reflectors . . . for all standard suspensions . . . individual or continuous runs. Finished in Wheeler Vitreous Porcelain Enamel.

Like other fixtures in the Wheeler Turret Line, this new unit has the new G.E. Turret Lampholders. No socket breakage . . . no falling lamps . . . speedy relamping . . . vibration-proof.

Before you specify fluorescent fixtures for any installation, get full information on the new, improved Wheeler Turret Line. Write the WHEELER REFLECTOR CO., 275 Congress Street, Boston 10, Mass.



An improved commercial fluorescent fixture for offices, stores, hospitals, schools, public buildings. Special top shield eliminates "hot spot" on ceiling...one-piece, hinged louver body cuts glare in line of vision. For two 40-watt lamps...3½" lamp spacing.



New Wheeler RLM Fixture for locations where compact size and lighter weight are desirable. Scientifically designed, ruggedly built and finished with Wheeler Triple-Guard Vitreous Porcelain Enamel. For two 40-watt lamps...individual or continuous runs.

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MADE BY SPECIALISTS IN LIGHTING EQUIPMENT SINCE 1881

Makes a Perfect WELD CAST IRON to STEEL

NI-ROD WELDS are the friend of the production boss who wants to cut out drilling, tapping, bolts and rivets

> Look around your shop and count how many metal parts are being put through machine operations. Count how many take up machine time that you might better use for more production. Then consider how Ni-Rod* welds of iron-to-steel actually add strength, and save machine shoptime:

OF SERVICE

Take a good look at the cast iron spider in this wheel. It's welded to the sheet-steel pressed rim. Welded with Ni-Rod electrodes for hard use on

the Mt. Vernon Lime and Fertilizer Spreader.

Before Mt. Vernon found out about Ni-Rod welding, they tried other ways of fastening these spiders and rims together. But you know that drilling and tapping mean extra production steps, and that while bolts can fail, welds add strength.

What you may not know is that really strong, sound welds can be made quickly between cast iron and steel.

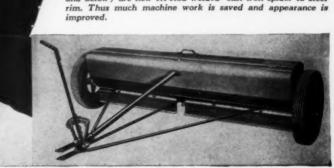
Those strong, tough welds are pie for Ni-Rod. If necessary they're easyto-grind welds, too, so the finished job looks neat and workmanlike. That brings smiles to the faces of salesmen and dealers.

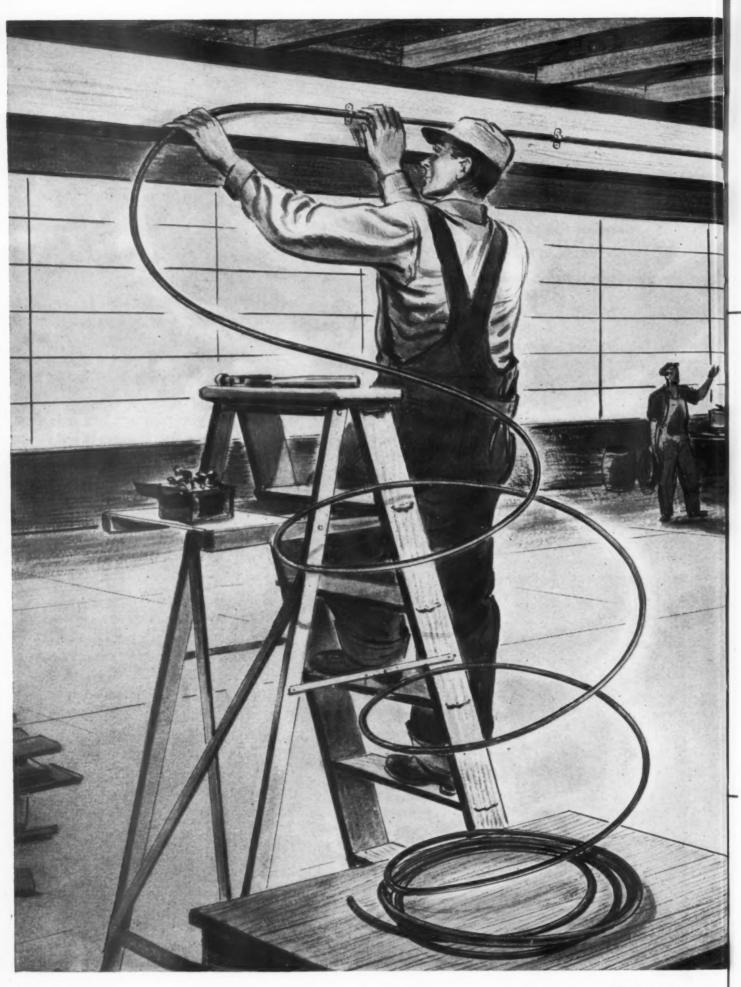
Want to know how Ni-Rod can help you, free? Drop us a card asking for special sample package of three Ni-Rod electrodes. Any diameter you choose: $\frac{3}{32}$ ", $\frac{1}{8}$ ", $\frac{5}{32}$ ", or $\frac{3}{16}$ ". They're yours for the asking!

*Reg. U. S. Pat. Off.

THE INTERNATIONAL NICKEL COMPANY, INC. 67 Wall Street, New York 5, N.Y.

Wheels of the Mt. Vernon Lime and Fertilizer Spreader (left and below) are now Ni-Rod welded-cast iron spider to steel rim. Thus much machine work is saved and appearance is





again and again YEAR after YEAR

THERE'S NO BETTER PROOF of safety, dependability and economy . . . electrical contractors who know Roebling Building Wire and Cable from their own experience specify Roebling again and again, *year after year*. And no matter what the requirements, there's a Roebling wire or cable to fill the bill exactly.

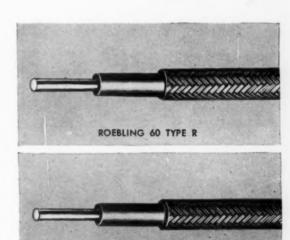
Increasingly in demand today is Roebling Wire 60 Type R for circuits up to 600 volts and operating temperatures to 60° C. (140° F.). Synthetic rubber insulated, its fibrous covering highly flame-resistant and moisture-retardant, it is available with solid or stranded conductors... Similar to 60 Type R, but offering special advantages, Roebling Type RH has heat-resistant insulation approved for operating temperatures to 75° C. (167° F.) and 60 Type RW has low-moisture-absorption insulation and is ideal for general use in damp locations without lead sheath.

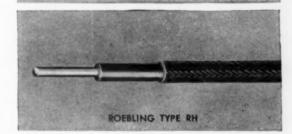
Your nearby Roebling Distributor will be glad to help you choose the *right* wire or cable for top performance on specific applications. Write or call him for prompt assistance.

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ROEBLING 60 TYPE RW

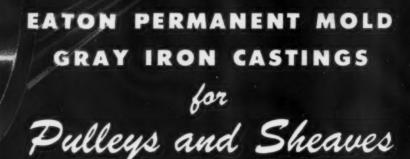
* WIRE ROPE AND STRAND * FITTINGS * SLINGS
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AIRCORD TERMINALS AND AIR CONTROLS * AERIAL WIRE
ROPE SYSTEMS * ELECTRICAL WIRE AND CABLE
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COLD ROLLED SPRING STEEL * SCREEN, HARDWARE
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Uniform structure throughout the casting, freedom from growth and segregation, plus good tensile strength and ability to take a high surface finish—these qualities make Eaton Permanent Mold Gray Iron Castings ideal for the production of V-belt pulleys, sheaves, and similar parts. Free machinability makes for maximum production speed and low machining cost.

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our Wirebound Crates even benefit our dealers



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3. Packed, the scooter rests snugly in specially notched cross pieces nailed to the bottom of the crate.

"Dealer reactions prove Wirebounds the ideal crate for the "Doodle Bug" motor scooter," according to G. P. Castner, Vice President and General Manager of the Beam Manufacturing Company of Webster City, Iowa. "Merchandise arrives at the point of destination ready for immediate assembly and display on the sales floor."

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4. Packaging is complete when the top is folded into position and secured by twisting the four binding wires.

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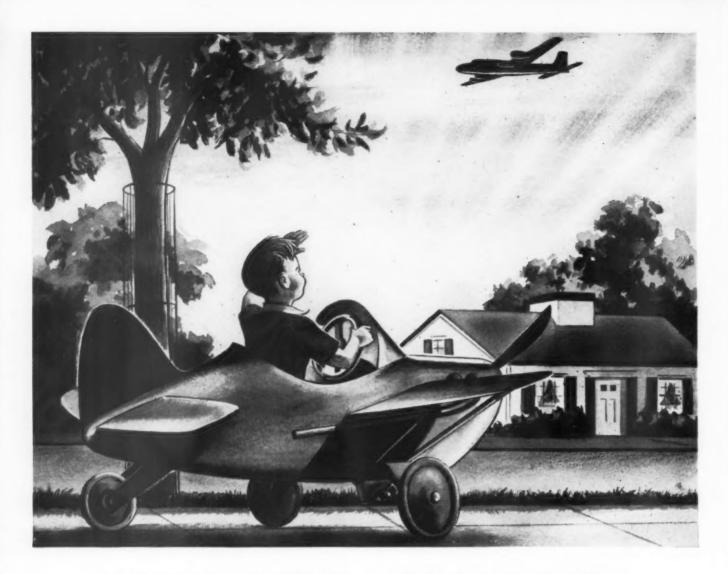
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Here's a challenge: Send us complete details of your toughest bolted trouble spot. We'll supply test nuts—FREE, in experimental quantities. Or, if you want further information, write for literature. Elastic Stop Nut Corporation of Amer-

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IS VISIBLE EVIDENCE OF
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... and with G-E fast emergency tube service always near you, these compact, efficient thyratrons stay on the job.

Your G-E tube distributor or dealer stocks GL-502-A's and other types you may need to keep your welders, d-c motors, electronic heaters, and other tube-controlled equipment running full-time. Same-day—often same-hour—tube replacement service is yours on request. Take advantage of this convenient, speedy local supply source! Phone your G-E distribu-

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Replaces Glass 2050 and 2051, though only half the size of either type.

CHARACTERISTICS

Max over-all height 2% inches
Max over-all diameter
1 5/16 inches

No. of electrodes 4
Heater voltage 6.3 v
Heater current 0.6 amp

Ambient temperature limits —55 to +90 C

Peak anode voltage, inverse 1,300 v

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National Bearing Division - combined with American Brake Shoe Research offers you a unique service in the design and production of non-ferrous bearings. A service which covers every step in the process of solving your bearing problem—proper design, alloy, stress loading and lubrication. In competitive selling every feature added to your product opens wider the door to a sale. When you plan to redesign bearings with an eye to longer and more trouble-free service, contact National Bearing Division for a fresh approach and the complete followthrough to the solution of your problem.

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A useful guide to better results with Stainless

Here in convenient form we have condensed the essential facts about the various grades of U·S·S Stainless Steel that will assist you in determining broadly which is most suitable for your needs. Keep in mind, however, that this chart merely indicates general characteristics and basic applications.

To get optimum results from these service-tested Stainless Steels, any fabricator, and especially any one contemplating the use of Stainless for a new product, should obtain expert advice in its selection and fabrication. This we are prepared to furnish.

Our Stainless engineers are specialists in the use of these materials. Ask for their cooperation. You'll find their suggestions practical and extremely helpful not only in determining the grade of U·S·S Stainless that will do the best job for you, but in showing how it can be handled most efficiently on your equipment.

grade	characteristics	when or why used	oose from							
U-S-5 18-8 Type 302	Excellent corrosion resistance.	General all-purpose grade for food, dairy, chemical, and architectural uses.								
U-S-S 18-8 S Type 304	Carbon is limited to 0.08% maximum.	For applications similar to U-S-S 18-8 Type 302, but offers superior corrosion resistance in weld-affected areas.	SHEETS are supplied in plain or polish finishes which are standardized. The are designated as: No. 1—Hot Roll Annealed, and Pickled; No. 2D—C							
U·S·S 18-8 Ti Type 321 U·S·S 18-8 Cb Type 347	Similar in general corrosion re- sistance to U·S·S 18-8 and U·S·S 18-8 S. Stabilizing additions im- munize corrosion attack of heat- affected areas.	High temperature service, \$00°F to 1600°F. For severe corrosion conditions in welded assemblies which cannot be subsequently annealed.	Cold Rolled; No. 2B-Bright Cold Roll No. 4-Standard Polish on either C or Both Sides; No. 6-Tampico Brush No. 7-High Luster Polished.							
U·S·S 18-8 Mo Type 316	Exceptional corrosion resistance, improved creep strength.	Severe corrosive conditions, particularly those involving pit-type corrosion.	STRIP is supplied to ordered requ							
U·S·S 18-8 FM Type 303	Galling and seizing reduced, machining greatly improved.	Gears, valves, bolts, screws, or other machined products.	ment in coils or straightened and lengths. It should be ordered to a d mal thickness, with width and finish suit the particular application.							
U-S-S 25-12 Type 309	Exceptionally stress resistant at high temperature exposure.	In service where temperatures up to 1900°F are encountered.	and the particular applications							
U·S·S 25-20 Type 310	Offers superior resistance to oxidation.	Applied where very high temperatures are involved.	PLATES AND BARS are furnished rolled, annealed, and pickled; bars							
U-S-S 17 Type 430	Good corrosion resistance.	Automotive and interior architectural trim; some specific chemical applications.	olso furnished cold finished, 'center ground, or polished. Special secti and plates are furnished with pi finish and require coarse abrasive							
U-S-S 27 Type 446	Limited formability, generally not adapted to severe drawing. Excellent scaling resistance.	Principally used at high temperatures up to 2000°F for static parts not subjected to high stress.	preliminary grinding, where a polisi desired.							
U-S-S 12 Type 410	Martensitic grade, strengthened by conventional heating and quenching.	Engaging mechanical parts, such as pump rods and valves.	TUBULAR PRODUCTS are furnished most popular grades of U-S-S Stain							
U-S-S 12 Turbine Type 403	Composition basically same as U·S·S 12.	Modified analysis suited for turbine blades and similar application.	Steel. A variety of finishes are obtain by grinding and polishing cold dra annealed, and pickled tubing.							
U-S-S 12 AL Type 405	Composition basically same as U-S-S 12.	Modified analysis for applications re- quiring field welding where air-harden- ing cannot be corrected by heat treat- ment.	ROUND WIRE is available in coils wi a size range of .5" to .005" inclus							
U-S-S 12 FM	Added elements give extra ma- chinability over U-S-S 12.	Used for valve parts and other articles made on automatic machines.	Straightened and cut material is lim to .030" and coarser. Finishes avail include pickled, metallic coated,							
U·S·S 5 Type 501	Welding hardens; annealing re- stores ductility.	Used in petroleum industries for strength, and resistance to corrosion and oxidation at moderately high temperatures.	diamond, and soap drawn, ground, polished. A variety of cold hear wire, spring wire, weaving wire, ar ture binding wire, and wire rope							
U·S·S 5 5 Type 502	Basically same as regular U·S·S 5.	Modified analysis reduces tendency to weld-harden.	also available in stainless steels.							

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stand abrasion. The construction of both conductor and insulation are balanced to give durability and flexibility.

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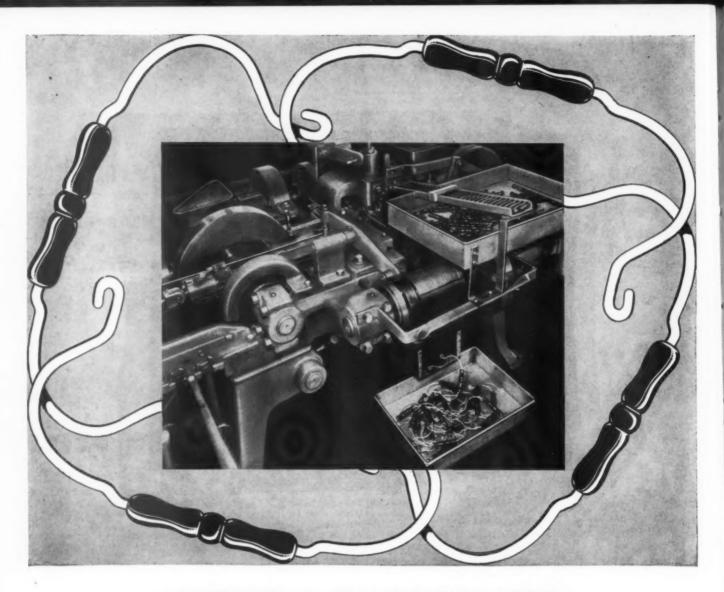


Wire Brush. Here is the best wire brush your money can buy. Long wearing, it is ideal for cleaning deposited metal, and also for preparing parent metal for welding.

As with all Airco arc welding accessories, the above are ready for immediate shipment. For more information about Airco's complete line, write your nearest Airco Office. (In Texas: Magnolia Airco Gas Products Company. On West Coast: Air Reduction Pacific Company.)



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SPECIAL HANDLE-ING

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Find out for yourself how well Wickwire can meet your requirements. Let us send you our free book, "Springs and Formed Wires." Remember too, that our engineers are at your service in designing any conceivable type of spring or wire form. For a copy of our free book; for engineering help; or for quotations, write Spring Department, Wickwire Spencer Steel Division of C. F. & I., 2 New Bond Street, Worcester 6, Massachusetts.



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For Severe Service...

Thermoid "HT" Type—Built to carry highly abrasive materials under severe conditions. Supplied with 48 oz., 42 oz. or 35 oz. hard duck, 32 oz. or 28 oz. fabrics. Skim coat between plies. Average friction 20 to 24 lbs.; average tensile strength of covers 3500 to 4000 lbs. In widths, number of plies and cover thicknesses as specified. Maximum width 60"; approximate roll length 525 ft.

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For Light Service.

Thermoid "C" Type—Is made to carry non-abrasive materials under light service conditions. Furnished with 28 oz. or 32 oz. fabric. Average friction 12 to 15 lbs.; average cover tensile 800 to 1000 lbs. Number of plies and cover thicknesses are optional. Maximum width 60"; approximate roll length 525 ft.

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Lamson and Sessions pioneered the "high tensile" Cap Screw. Many years of bolt making "know how" of experimentation, research and on-the-job testing stand behind the modern Lamson "1035" product. Beginning with the raw material, Lamson metallurgists carefully control the quality of Lamson "1035" Cap Screws throughout the entire manufacturing process. The newest type of bolt making machinery assures precision accuracy in heading and threading.

Heat treating is done automatically, under carefully regulated atmospheric control, and regular laboratory tests double-check the accuracy of this modern equipment.

As a result of the painstaking care with which they are manufactured, Lamson "1035" high tensile Cap Screws embody the three characteristics of the "ideal" Cap Screw-toughness, strength and precision. It's truly "a tough combination to beat"!

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The convection heater shown here assures your employees of clean, comfortable heat with no danger of scorched walls or annoying odors. A series of strip heaters form the efficient heating element, and the strong, perforated steel case protects the elements from physical damage.

Or, you may prefer to use the Westinghouse dual-purpose, fan-type unit that heats in winter and cools in summer. In either case, the Westinghouse name on these heaters is your assurance of quality workmanship and superiority of design.

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These heaters are immediately available—call your nearby Westinghouse office or distributor.



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A Silbraz joint is silver-brazed not soldered. This modern pipe joint will not creep or pull apart under any condition which the pipe itself can withstand ... vibration or corrosion will not affect it. A Silbraz joint is designed to have a tensile strength equal to about three times standard weight brass pipe, and the pipe will fail before the joint will pull apart.

For full information about Silbraz joints made with Walseal valves, fittings and flanges, see your nearby Walworth distributor, or write for Circular 84.

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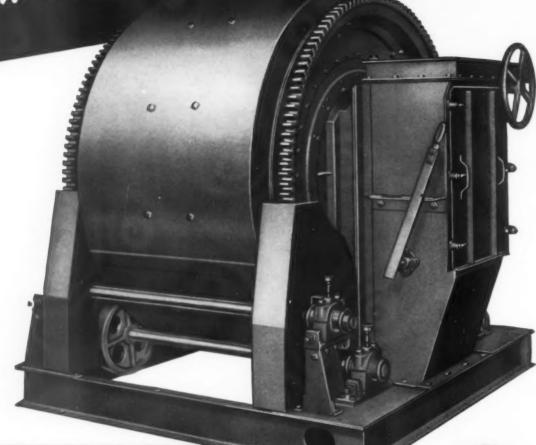
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- ★ 4-Way Mixing Action Assures Thorough Blends
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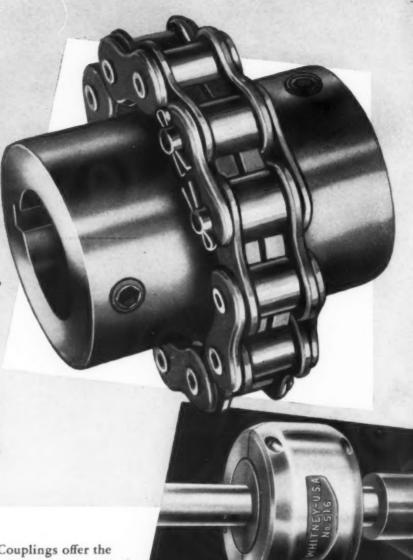
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Compact design of the Whitney Flexible Coupling is illustrated in this typical application.

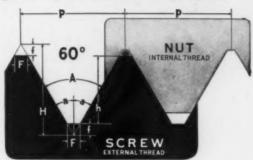
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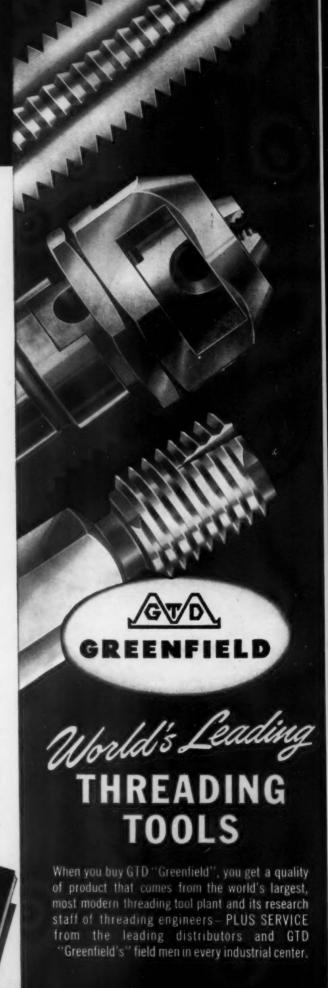


The sketch shows the basic design of the standard American screw thread. It cannot, however, begin to show the intricate problems which are involved in applying this and other thread forms to the varied uses of industry.

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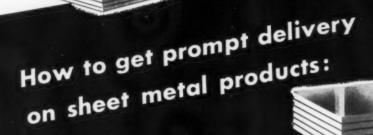
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FIG. 1

This forced bulging of a straight-sided V-Belt against the sheave groove walls naturally produces excessive wear along the middle of the belt's sides—as indicated by the arrows. Also, because the full side of the belt does not uniformly grip the pulley, there is a definite loss in drive efficiency.

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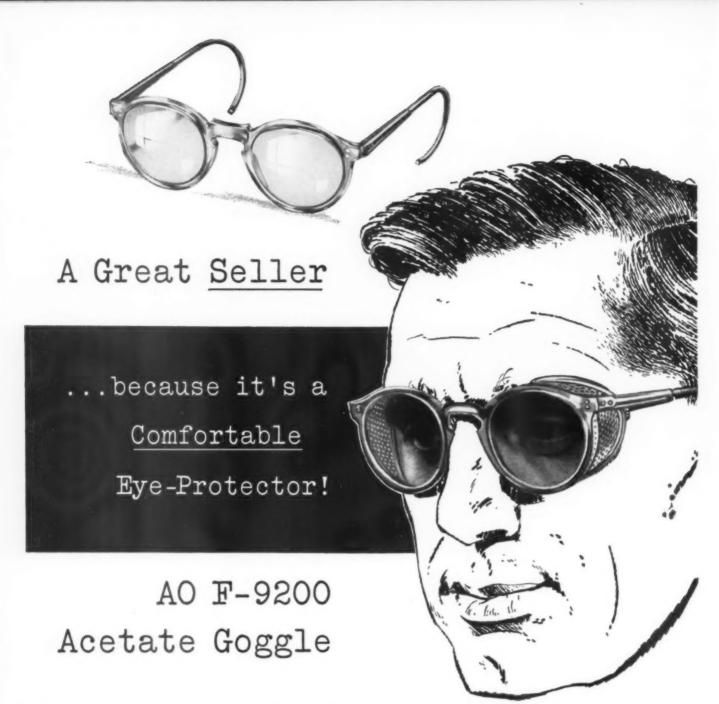
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- 3. Smarter appearance.
- 4. Lenses that conform to and cover eye orbit.
- 5. Improved fit.
- 6. Comfortable, lightweight, face-formed bridge.
- 7. Nosepads which distribute goggle weight evenly.

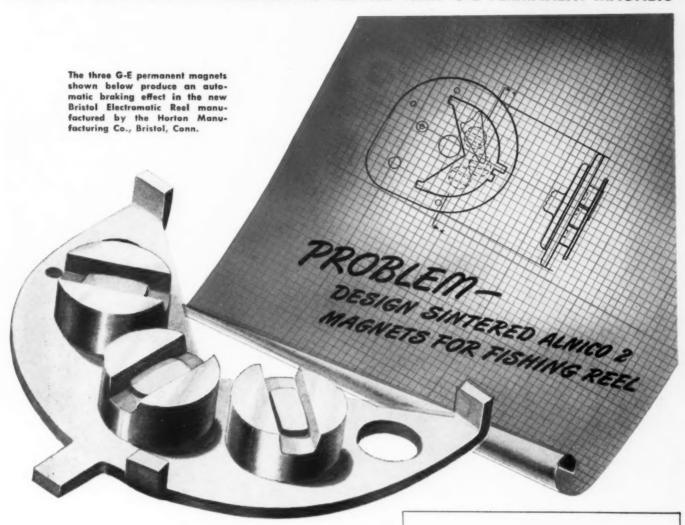
This goggle does a prime protection job on operations in chemical and electrical plants where the tiniest spark might cause fire or explosion. Because of its acetate construction it is especially recommended for these and similar jobs where metal goggles might not be recommended. Available with ventilated side shields for added safety against lateral-striking objects. Lenses are 6-Curve Super Armorplate. When protection from glare, ultraviolet or infra-red radiations is a "must", specify Calobar lenses. For a handy source of supply, see the AO representative. There is always one near you.

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G-E permanent magnets are continually finding wide application in many fields. The magnetic reel is but one example of the adaptation of an industrial magnet engineering

principle to an entirely different field.

Perhaps there's a use for G-E permanent magnets in your product. Or, you may wish to improve your present magnet design for greater efficiency. Our engineers will be glad to work with you to improve your product. For details and your free copy of CDM-1, G-E PERMANENT MAGNETS, write Metallurgy Division, Section CU-10, Chemical Department, General Electric Company, Pittsfield, Mass.





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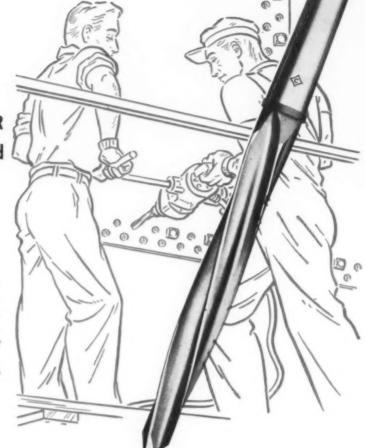


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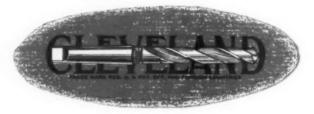


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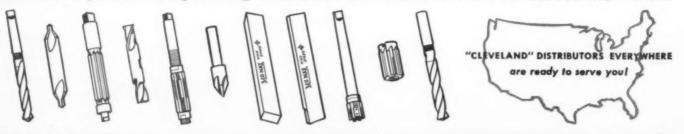
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COMPLETE LINE. In addition to lag screws, machine, plow and carriage bolts (main illustration), RB&W offers a complete line of bolts, nuts, screws, rivers and allied fasteners.

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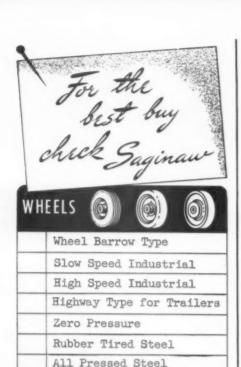
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S A G I N A W PRODUCTS CORPORATION INSTRUCTS ST. SAGINAW. MICH.

filosofy of buying

DISTRIBUTION has replaced production as the major concern of management. This statement comes, surprisingly and significantly, from the American Society of Mechanical Engineers, through Fenton B. Turck, chairman of the Society's committee on distribution, which is undertaking a nationwide study of prices, costs, and transportation. "The American distribution system is undergoing a radical change almost overnight," Mr. Turck continues. "It is confronted with new rules and rapidly increasing costs. These are the most basic economic changes in thirty years." Citing the Supreme Court decision on basing point pricing, and the fact that direct labor charges on railroads have increased faster than the advancement of transportation efficiency, among other factors, the preliminary statement is said to concern manufacturers and consumers of all types of products throughout the country. Purchasing Agents, as well as Mechanical Engineers, will do well to study the changing situation with more than cursory attention.

WHEELER PEAK, northeast of Taos, N. M., has been established as the highest mountain in the State of New Mexico, and the U.S. Geological Survey, with no little embarrassment, has withdrawn its data that since 1889 has shown the three Truchas Peaks, north of Santa Fe, as tops in topography. The item is pertinent here because it was Harold D. Walter, Assistant State Purchasing Agent by profession, and amateur orologist (mountaineer, to you) and photographer by avocation, who discovered the discrepancies in altitude and persuaded the official geographers that Wheeler Peak topped them all by 41 feet, at 13,151. Besides climbing the mountain twice, he made his observations with camera and a borrowed altimeter from many angles, including shots from such intriguing places as Bull of the Woods Mountain, Old Mike Peak, and a third eminence which is not dignified by name on any map. We suggest that Walter's Peak would be a most appropriate name.

A N acceptance test of more than usual interest is reported in the Houston Press. It seems that City P. A. Charles Cross purchased some pretty blue uniforms for the pretty elevator girls at City Hall. The uniforms looked pretty good, on paper. But when one of the aforesaid elevator belles modeled the suit for Mr. Cross, he promptly made out a rejection slip. No fashion expert, he knows when things don't look right.
"I just can't explain it," he is reported as saying. "I couldn't put my finger on it, but they just didn't look right. They either bulged out in the wrong places or didn't bulge. There was something wrong." girls are entitled to their ins and outs as well as to their ups and downs.

WHAT'S a two-letter word that eliminates jobs? That's the question asked in one of the striking advertisements used by the McBee Company of Athens, Ohio, in a local newspaper campaign to acquaint its employees and their fellow townsmen with the role of industry and management in maintaining prosperity in the community. The answer:

the community. The answer: "It's 'NO'. That's what the purchasing agent says when the price of a product is more than he will pay. This results when rising costs increase selling prices to the point that buyers rebel. Then switches are thrown on machines and the roaring hum that makes prosperity and jobs is stilled. . . At McBee we recognize that danger and are determined that the price of our products shall not rise beyond the reach of our customers. . . The inflationary pressure is still great. But as long as management and employees face the problem together and do everything to increase efficiency and production, we are confident the problem will be solved. In that way, we will protect the future of our company that means so much to us—and to Athens."

T HE Research Institute of America, one of the top organizations in its field, comes to headquarters for its source material. Two and a half pages of purchasing policy recommendations in its report of July 23rd are based directly (and with due credit) on the July "Ford Issue" of Purchasing Magazine. For your own research on the subject, and for full details on the why and how of the recommended methods, you can find no better source than the Ford Issue, which bids fair to become the standard case study in buying.

S IMILAR research brings the "Executive Counselor", confidential weekly letter service, to Purchasing's Survey of Purchasing Opinion for an authoritative appraisal of the basing point situation and its effect on industry.

T HE City of Chicago is contemplating a streamlining of municipal purchasing procedures. A recent study indicates that it now takes 53 days, on the average, to process a requisition into a purchase order. The reason for this is the required procedure on all items of more than \$1,000 in value-requisition to the purchasing agent, advertisement for bids, opening of the bids, analysis of the bids, submission of purchasing agent's recommendation to the finance committee of the City Council, possible submission to a subcommittee for study, approval by the Council, issuing of the order. The situation becomes more acute during the summer months, when Council meetings are suspended and no positive action can be taken. The Chicago Tribune reported on July 26th a total of \$1,-919,980 worth of city business caught in this eddy of inactivity. About three-quarters of these potential orders had been awaiting Council action for three weeks or more; many of the bids had a 60-day expiration clause; many more had an escalator clause, and prices were rising. Objective of the new drive against red tape is to cut this time down to 30 days. Such "speedy" action could result in big savings on a \$295-million annual budget.





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Purchasing Previews

October 1, 1948.

GOVERNMENT PURCHASING IS EXPANDING

Cushion against a major slump in the economy is increasing. As Government commitments to purchase goods and services increase, the likelihood decreases for either a major adjustment in prices or a large decline in volume of business.

Still expanding are the purchases and requirements of the military, and of capital goods items for export to Europe.

Military procurements are just beginning to get under way. The prime contracts have been let; however, in airplanes and weapons, the letting of contracts is, in most instances, merely a go-ahead on design and engineering, with a lapse of six months to a year before these preliminary phases finally are translated into production line requirements for materials.

Another Government purchase activity which is expanding is procurement for the national stockpile of critical and strategic materials.

U.S. PROCUREMENTS OFFSET "SLUMPS"

These Government requirements bulk large in offsetting slumps in individual industries where, for one reason or another, retail sales have slackened off.

The textile industry has had seasonal problems somewhat similar to those which developed last year. There has been a trend in the shoe industry toward a new adjustment in pricing to revive the war-expanded mass market.

The significant factor is that while there is considerable talk about weaknesses in one market or another, none of the statistical indexes—whether Internal Revenue collections or Federal Reserve reports—show conclusive weakness in any one field.

Those who have forecast sharp adjustments in business volume and price maintain that the adjustment has been staved off for the time being, and they still anticipate an adjustment.

GOVERNMENT CONTRACTS AND SMALL BUSINESS

With Government procurements constituting a bulwark against downward adjustment, considerable emphasis is being placed on spreading the Government business throughout as much of the industrial structure as possible.

While the most effective approach toward fanning out the business will be through the normal process of sub-contracting, Congressional committees have been reviewing the steps taken by the military services and the Economic Cooperation Administration which could enlarge small business participation.

The statute books carry a number of pious phrases to the effect that small business should not be overlooked in passing out contracts, but putting these intentions to work is more difficult.

The military services have been placing a large percentage of their field purchases with so-called small

business.

A spot check of the Navy's major purchasing offices in the field revealed that over a three-month period of business, approximately 70% of the total Navy procurements, dollar-wise, was with concerns employing less than 500 people.

This does not hold true in procurements placed by the various bureaus of the Navy direct from Washington, where most of the purchases of large and intricate equipment are

initiated.

A similar condition prevails in the Air Force where, however, the major procurements of aircraft and materiel are centralized in Wright Field, rather than Washington.

SIMPLIFIED U.S. BUYING TO AID SMALL BUSINESS

Biggest problem of smaller businessmen, as far as getting Government business is concerned, is knowledge of what to do—how to go about it.

Military procurement officials indicate that the trend toward single department procurement by the armed services will simplify matters for smaller business, in that they will have only a single department with which to deal.

If the vendor has food items to sell to the National Military Establishment, he will deal with the Quarter-master Corps of the Army, which buys food for the Navy and Air Force as well as for the Army. Lumber for the services is being purchased by the Corps of Engineers. The Navy buys coal for everybody.

While there is a nominal control over small business participation in military procurements, the problem of injecting small business into the European Recovery Program

is more difficult.

The net effect of the Economic Cooperation Administration is that this country is banking the deal. The Western countries of Europe originate the purchase and place the procurement—and there is no direct means by which any public agency of this Government can channel these purchases into any source of supply, large or small.

The remoteness of the market tends to give larger suppliers an advantage, in that they are able to promote their sales, and to actively seek out the foreign buyer.

England, Italy and France maintain regular purchasing missions in this country and, in addition, Belgium, the Netherlands, Norway and Sweden have established purchasing agencies here which purchase a very limited number of allocated items, such as wheat and coal.

Some of the French missions are really called groupments—that is, a large number of private concerns in France pooling together to buy the supplies that they need.

Under these circumstances, the only way that the smaller business firm can be aided in obtaining foreign business is by having all information on what is being purchased—and by whom—made public far enough in advance of the actual purchase to allow time to work up a plan of participation.

Another step would be to convince the European countries that it is to their self-interest to encourage smaller U.S.

firms to participate in supply.

It is difficult for a foreign buyer to understand the advantage of spreading the business around. The European Recovery Program is a short term plan, while the benefits of planned procurements, with alternate sources of supply, are more tangible in the longer range.

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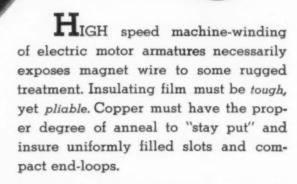
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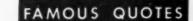


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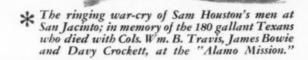
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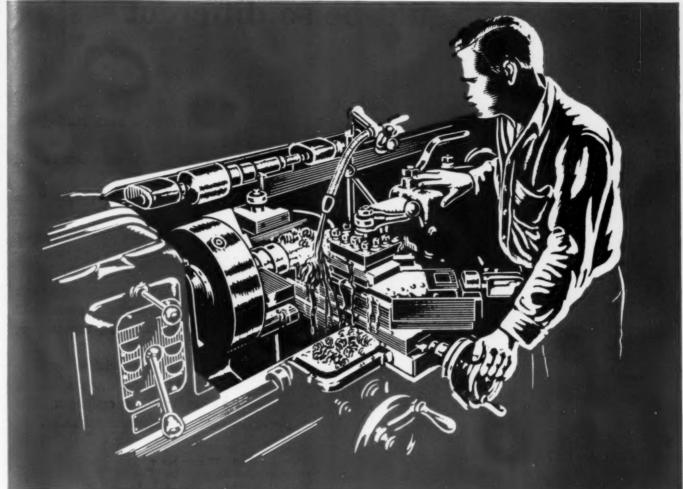
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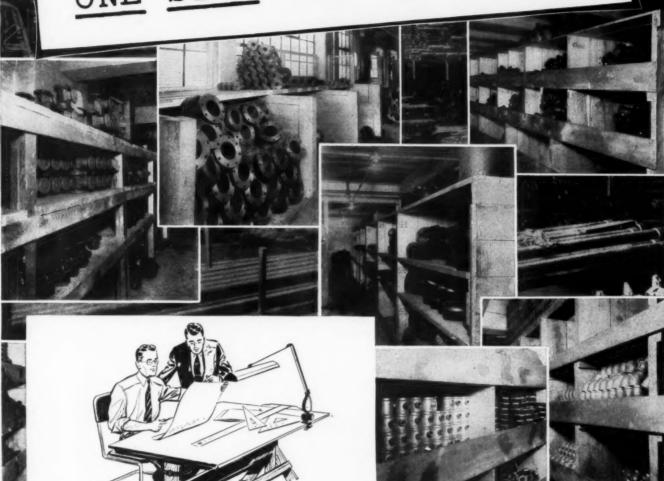
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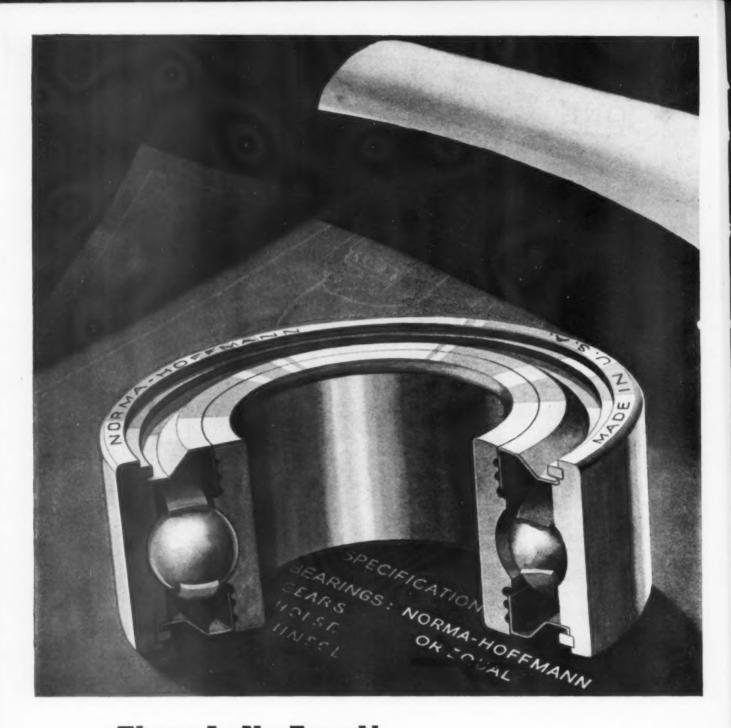
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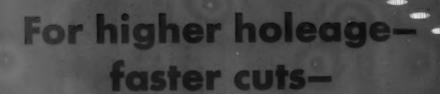
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OCTOBER, 1948

Published monthly by Peeaye, Inc.
Subsidiary of
CONOVER-MAST PUBLICATIONS, INC.
Printed at: Orange, Conn.

Editorial and Executive Offices: 205 East 42nd Street, New York 17, N. Y.

Chicago Office:

333 N. Michigan Avenue, Chicago 1, III.

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VOLUME XXV. NUMBER 4. Subscription rates: United States, U. S. Possessions and Canada: \$4 per year, \$6 for two years; elsewhere: \$6 per year, \$9 for two years. Single copies 50¢. Contents are indexed weekly and annually by the Engineering Index Service. Copyright 1948 by Peeaye, Inc., in the U. S. A.





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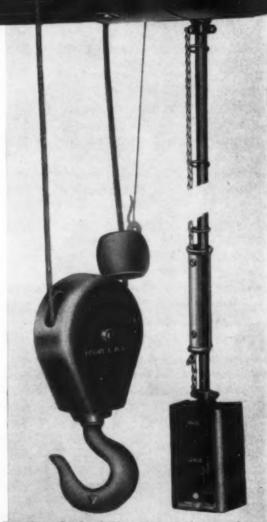
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The Pause That Depresses

NOT without reason did the economists of a generation ago refer to their science as "political economy". For it is a proper function of government in a civilized state to temper the ruthless effects of unbalanced supply and demand and to curb the abuses of economic power as they may run counter to the public and national interest. Purchasing agents have long since learned to give equally close consideration to the Sherman Anti-Trust Law and the Taft-Hartley Labor Law and the directives issued under national defense legislation, as they do to the so-called "natural" laws of economic behavior such as Gresham's law of currency, the law of supply and demand, the law of diminishing returns, and the like, when they are making a business decision.

That function of government is improperly used when the major consideration in political action—or inaction—is the gaining or retaining of political power and patronage.

Yet every four years, it is our custom to sanction a period when such political considerations are frankly in the ascendancy and the basic economic considerations are neglected. We even dignify this period by hailing it as the democratic process of a free country. Almost every economic forecast for months past has been qualified with the reminder that this is an election year. Now, at the height of the campaign, real statesmanlike, conscientious political economy is in complete paralysis.

It has become the fashion to attribute political economic action to a state of emergency. Along with this, it has become increasingly difficult to differentiate between an actual and a synthetic emergency; the layman simply does not have the inside information to form an intelligent opinion. But in the present state of world affairs and domestic affairs, certainly both elements are present, and inaction in respect to the real emergencies and imbalances in our system is inexcusable and dangerous.

For example, some day very soon we must stop promising both the support of farm prices and the reduction of living costs, and must come to some realistic resolution of this problem. That is just one of many problems that must be resolved. Our whole national existence depends on finding the answers and putting them into effect even though some one gets hurt in the process. The major party platforms show little divergence on civil rights, taxation, fair labor standards, and the endorsement of free enterprise, but we must wait until after the elections to get positive action on these responsibilities.

Meanwhile, business drifts on a sea of indecision. This is an election year—the pause that depresses.

Stuart F. Henritz

We have available a limited number of front cover reprints from the July issue, showing the full color portrait of the late Albert J. Browning, handsomely mounted and suitable for framing, uniform in style with the autographed color portraits that are distributed from this office each month. Many of Mr. Browning's friends may wish to have a copy. As long as the supply lasts, we shall be glad to send a copy free upon request to Purchasing, 205 East 42nd Street, New York 17, N. Y.



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A brief summary of outstanding features of timely interest and importance in this issue, to conserve the time of busy readers



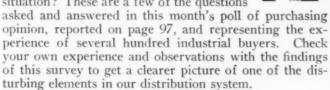
Decreasing profit margins have emphasized the need for increasing efficiency in the use of operating capital. An outstanding opportunity for improved practice lies in the field of inventory control and faster stock turnover, resulting in having Fewer Dollars on the Shelf. The article on page

90 tells how this has been accomplished in one representative company by setting up a coordinated program of materials procurement and control. It is an example of good management under any circumstances, and of special importance in a time of price uncertainty such as business is now facing.

The economic and profit factors of **Inventory Turnover** are further explained in a graphic presentation on page 104, with a practical suggestion of how stock records can be organized to give a comprehensive picture of the situation, directing attention and action to the points where stocks may get out of balance.

The National Stockpile of critical materials has vital significance in respect to the general supply situation as well as to national security. Our Washington editor reports on the progress and direction of this program, with specific information on objectives, appropriations, and policies. Here are facts on which every industrial buyer should be informed. Turn to page 106.

Is the **Gray Market** a fact or fiction in today's business? Is it confined to dealers in scarce steel, or has it extended into other commodity markets? Is the present situation worse or better than during wartime? What can be done to clean up the situation? These are a few of the questions

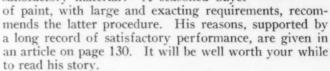


Rust is one of the great destroyers of material and of operating efficiency. It is a factor to be dealt with in regard to active or idle equipment, and in finished products and packaging methods. To combat this hazard, the science of **Rust Prevention** has made some remarkable strides in recent months. A technical expert in this field outlines approved practice, as to methods, materials, and tests, in a comprehensive article appearing on page 110.

A series of excellent photographs illustrate the discussion. Protect your investment in plant equipment, materials and products, by getting up to date with the latest developments.

We need more Imagination in Purchasing, says T. A. Corcoran of Louisville, N.A.P.A. Vice President for District No. 7, in this month's guest editorial on page 89. An incident is cited from his recent experience illustrating the fact that a little ingenuity and imagination can sometimes get results when the standard techniques and impersonal science of purchasing fail.

Do you write elaborate specifications on your Paint Requirements to tell the manufacturer just what formula to use? Or do you tell him what results are needed, in color matching and in service, depending on his specialized know-how to provide a satisfactory material? A seasoned buyer



Which is the more economical fuel—Cool or Oil? The handy chart appearing on page 109 has been developed to provide a quick comparison in the terms that are vital for the purchasing agent to know, the actual units of heat that can be bought for every dollar of expenditure, at any given market level.

The effectiveness of a purchasing department depends to a large extent on the cooperation of Other Departments within the organization. That cooperation can best be obtained through an understanding of the "how" and "why" of purchasing regulations and procedures. The article on page 99 tells of a comprehensive educational program carried on by one purchasing department, in a series of conferences and bulletins, with notable results in a better relationship and smoother operation.

Are you making full use of these monthly departmental features compiled especially to keep you informed on recent industrial developments? A selected list of new Trade Bulletins and Catalogs that are yours for the asking (page 14) and the illustrated summary of New Products & Ideas now available for the industrial buyer (page 146) will help you to keep up-to-date on these matters.



We Invite You to Share Our Century of Experience

A collection of all the Ryerson steel literature published during a century of service to American industry would make quite a shelf load. Just a few bound volumes are pictured here. Dating from pre-Civil War days to the present, they are solid evidence of the steel experience that works for you at Ryerson.

The Ryerson Journal of a quarter century ago lists the nation's first stainless steel stocks. Another volume is evidence that Ryerson led the way in bringing carbon steel stocks up to high quality standards. And in a more recent book is the first plan for buying alloy steel from stock on the basis of hardenability.

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Imagination in Purchasing

By T. A. Corcoran

MAGINATION is seldom listed as one of the cardinal qualifications of a capable purchasing agent. In fact, it is rare to see it mentioned at all as a qualification. In my opinion, however, it is one of the most important.

Many qualities are necessary in an able buyer, and all buyers probably have them in some degree. But the individual's keenness of imagination will determine to a great extent whether he will be just another buyer or a successful purchasing agent.

An outstanding example of the use of imagination on a large scale is the purchasing department of the Ford Motor Company, which was described so completely in a recent issue of Purchasing. A study of the organization and operation of that successful department discloses again and again innovations that could spring only from a keen imagination. Specific examples of the Purchase Research Department, which develops the ammunition of statistical and analytical facts that help the buyers do a better job, and the Purchase Analysis activity, which develops ways and means of helping suppliers to produce and transport more economically, thus reducing their prices of their products to Ford.

It is distasteful to make a personal reference, but sometimes it is the best way to clearly demonstrate a point. In our own organization, our Chief Engineer had decided to wait out the sellers' market in automobiles, but the wait proved too long, and he found himself with a 1938 car that was none too dependable. When

(Please turn to page 324)

T. A. ("Cork") Corcoran is currently serving a second term on the Executive Committee of the National Association of Purchasing Agents as Vice President for District No. 7, having been re-elected last May to the post in which he served with distinction in 1939-1940. The confidence and esteem thus expressed by his purchasing colleagues of the southeastern states has been endorsed by purchasing men throughout the nation, who have known "Cork" during the intervening years as the exceedingly capable and hard-working chairman of the National Committee on Paper.

Mr. Corcoran has been buying for the Louisville Courier-Journal and The Louisville Times since 1919. His earlier business experience was in the construction field, including traffic work in connection with the building of the first nitrate plant at Muscle Shoals. He joined the publishing company as Assistant Purchasing Agent after receiving his honorable discharge from service in World War I, and two years later was at the head of the purchasing department. He also handles the buying for two subsidiaries—Radio Station WHAS and The Standard Gravure Corporation—and is in charge of stores, receiving, newsprint accounting, traffic, general maintenance, and building operation. A recent assignment of more than ordinary interest was as a member of the five-man Building Committee which planned and supervised the company's new building, one of the country's outstanding examples of functional business architecture. He moved into the new quarters last month.

In addition to his interest and activity in Purchasing Agents Association work (He was President of the Louisville Association in 1934 and has served on innumerable committees in that group and in the District organization) he is a member of the Mechanical Committee of the Ameri-

can Newspaper Publishers Association and has addressed the meetings of that Association on numerous occasions, a member of the Pulp and Paper Products Committee of the American Society for Testing Materials and an active member of the Louisville Chapter of the Society for Advancement of Management. In his home community of New Albany, Indiana, just across the Ohio River from Louisville, he is a trustee of St. Mary's Church, former president and currently member of the Board of Directors of the Catholic Community Center, member of the Board of Directors of the New Albany Country Club, and member of the New Albany Council, Knights of Columbus. He is an enthusiastic golfer and fisherman and retains a keen interest in basketball, a sport in which he was a stellar performer and captain of the New Albany High School team. The Corcorans have three sons and one granddaughter. The oldest son, following service in World War II, is completing his studies in engineering at Notre Dame University.



Fewer Dollars on the Shelf

Planned reduction of dollar inventory without jeopardizing service requirements calls for a close coordination of the related functions of purchasing, stores, stock control and surplus disposal, in a comprehensive materials program

By Joseph Albin



G. J. Brandewiede Materials Director, American Airlines

THE reduction of dollar inventory on the shelf is a basic task of Purchasing when such a program leads to protection of the investment against obsolescence and deterioration through quicker turnover. Such a program can lead to dramatic savings, especially in the case of multiplant organizations, and as exemplified in the servicing of a large airline with numerous stations, where stockroom problems are multiplied.

To appraise the magnitude of savings possible and the guideposts in a program of reduction of dollar inventory on the shelf at any given time, it is helpful to locate our sights on the type of company that spends in the neighborhood of 25 million dollars yearly in the function of procurement for the service needs of the organization. It is assumed that such a company operates customarily with a twelve million dollar inventory. If our assumed company could operate its inventory with efficiency at a figure of six and a half million dollars, the saving is apparent.

In the early part of last year, American Airlines had under considMr. Brandewiede has been with American Airlines since July, 1947. He dates his association with the aviation industry back to the early '20s, when he was purchasing aircraft for barnstorming activities of the Robinson Brothers. In 1926, he became Superintendent of the airmail route from St. Louis to Chicago, operated by the Robinson Aircraft Company. He joined the Curtis-Robertson Airplane Company, St. Louis, as Purchasing Agent in 1928. In 1942 he was given the post of General Manager of the Louisville plant of the Curtis-Wright Airplane Company, which produced the Curtis Commando transport airplane during the war.

eration a program for reduction of dollar inventory on the shelf at one time, a program that was connected with the reorganization of its purchasing department. In this reorganization, Purchasing became a component division in the newly constituted Materials Department. This department at American now functions as a fourfold unit composed of the following divisions: Purchasing, Inventory Control, Stores, and Surplus Sales. In July of 1947, G. J. Brandewiede joined American Airlines as its Materials Director.

Under Mr. Brandewiede's leader-

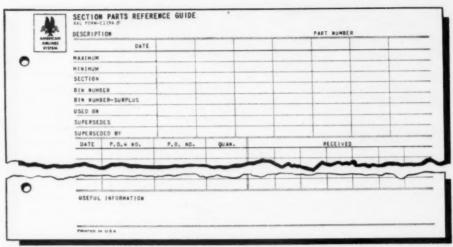
ship, the company undertook a study to analyze the methods of its buyers and assistant buyers. Data was collected bearing on the frequency with which the purchasing personnel does its buying, the number of requisitions handled, the number of items and purchase orders prepared and negotiated per month.

After several months of compiling figures, a fairly satisfactory picture emerged of how American planned and put through the purchase of materials and supplies such as engine parts, airplane parts, airplane and engine accessory parts, cabin equip-

ment such as head rest covers, seat covers, aisle rugs, food and food trays, commissary supplies, lavatory supplies, etc. Airplanes and other major items of equipment were not included in the broad classification of purchasing for servicing.

There are about 70 stations in the American system between Los Angeles and New York, which must be adequately supplied. The problem of determining what types of supplies and quantities that should be stocked at stations is the result of coordination with the operating departments, such as Maintenance, Service Engineering, and Passenger and Cargo. Certain stations carry little or no stock of supplies; others, because of the schedules passing through the stations, or stations where the schedules of airplanes are turned around for return trips, may require larger quantities of supplies. Certain types of equipment, particularly cabin supplies, linen, food, food trays, etc., are handled at certain stations laid out in the system according to flight schedules. This is all coordinated, and Purchasing is responsible to see that such supplies are bought and shipped direct to such stations by the vendor. Stations supplied from American's main stock are supplied by the Stores Division.

It can thus be seen that the servicing of a far-flung organization brings in its train a whole complex of intricate problems, and that Purchasing is pretty much in the center of things. Because utilization of equipment and supplies is closely scheduled in airline operations, the purchase and delivery of any item must be carefully weighed, among other factors, against available warehouse facilities. Thus,



A master record is maintained of all parts regularly carried in stock.

TOCK TRANSFE		stock record	and for transfer of inventory items only. All items to be of a st originating sceron and posted to stock records at destinan- hown charged to job or code.	eared from ion succept			
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QUANTITY QUAN T	MALANCE	and the second	COMPLETE DESCRIPTION	1	CHARGE	TIME	TOTAL
ORDERED SHIPME		PART NUMBER	USE MORE THAN ONE LINE IF RECEBSARY	CLASS	10 °	COST	AMOUNT
		PART NUMBER		Stock Records and	charged out	-	1
ORDERED SHIPME		PART NUMBER	URE MORE THAN ONE LINE OF RECESSARY	~	charged out	-	1

When inventory items are transferred from one station to another, a Stock Transfer form is made out in five copies. One copy is sent at once to the Treasury Department. The second copy goes with the shipment, for the files at the receiving station. The third copy also accompanies the shipment, for receipt and return to the Treasury Department, where it is matched with the original. The fourth copy is retained by the originating office. The fifth copy is sent to the Assistant General Storekeeper at the New York office, for the central control record. All items thus transferred are cleared from the stock records at the originating station and (except those that are charged to a specific job or code) are posted to the stock records at destination.



The Materials Department includes four divisions. In this photograph (left to right) are: J. T. Lynch, Director of Stores; J. R. Wiley, Director of Inventory Control; B. W. Trussell, Director of Purchasing; and L. A. Slauter, Director of Surplus Sales.

WENDOR: INTERCHANGE. ABLE WITH: USED ON: STORES SERVICE LETTER NO: SUPERSEDES REMARKS: DISPOSITION SHEET SUPERSEDED DATE OF PREPARATION DO NOT TYPE OR WRITE IN THIS SPACE	LOCATOR	CLASS:	PART NO.			SECTION
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₽ −12603						

A complete index to stock items is provided by the "Locator" card file.

A carbon copy on thin paper serves as the "Stock Advice", and a second carbon copy on light card stock serves as a bin card.

using warehouse space as a simple, easily manipulable yardstick for Purchasing strategy, it follows that less inventory on the shelf at any one time equates with reduced need for warehouse space. On this latter score, the first saving would be in investing capital and in costs for maintaining warehouse space. Secondly, less inventory on the shelf is dependent on controlled purchasing turnover, and as a consequence there is an incentive and impetus to the most efficient use of material on the shelves.

How a buyer proceeds (1) to buy at a good price, (2) to be sensitive to

the warehouse situation, (3) to secure the best shipping date and (4) to gain the complete cooperation of the vendor, can be illustrated by taking one item on which the unit cost is \$1 and a use of 12,000 units per month is shown.

The buyer commences by determining the following information before talking to the vendor: First, what are the chances of the specification on this particular article being changed? This could be ascertained by talking with Engineering and the using department equipped with past experience as to its usage. Second,

assuming the article is stable and with not much hazard of changes, the buyer then negotiates with the vendor and determines the following information: (a) How long does it take the vendor to produce this item from the date he receives the order until the date he makes the first shipment? (b) Is the item, because of its type and because of unit price quoted, the kind that must be produced in one lot, or can the item be produced by releasing production lots every 90 days without too great a price penalty?

alty?
"The buyer knowing his job comis all important to the operating and financial structure of the company in that, by good negotiations, relationships, and confidence with the vendor, he is able to procure materials on very practical programs. Considering a standard stable article which is designed for our company's specific use, having no other sale value, one buyer may, by issuing a release for shipment, take the delivery of six or ten months' requirements in one shipment, and thus create the necessity of storing, handling, and tving up dollars in inventory.

"Another buyer, by taking a different tack, could achieve more satisfactory results. This buyer would first of all outline to the vendor certain factors about the purchase, explaining the specific use of the item, and the quantities used per month, and work out an arrangement with the vendor whereby he ordered only his requirements for the next 30 days. He would then seek to arrange with the vendor to carry a reasonable in-

Special storage devices adapted to particular parts protect them from damage and facilitate an accurate count.



Stock clerks make a periodical physical check of stock on hand.



ventory at the vendor's distribution points geographically, that would permit prompt shipments to the company's using depots. From such an arrangement two important economies accrue. First, the buyer is not putting a large inventory on the shelf, some proportion of which may deteriorate or become obsolete as result of specification changes. Second, the vendor is maintaining constant contact and doing business with the company on a monthly basis-certainly a different situation than that subsisting when there is only one order per year, even though the total volume of business is the same in either case. It has been our experience that the vendor lends helpful cooperation in the company's planning.

"In one way or another, the aim is to achieve a functioning relationship with the vendor whereby the vendor serves the buyer beyond just supplying an article or quoting a price. The vendor, because of general economic market conditions and scarcity of materials, can assist the buyer in many ways.

"In the acquirement of this productive grade of vendor cooperation," Mr. Brandewiede further explained, "the buyer should be equipped to properly handle his work by (1) knowing intimately the necessary details and specifications covering those articles he is assigned to procure, (2) having accurate knowledge how much and when the particular articles will be required, and (3) satisfying himself that the delivery schedules he stipulates dovetail with actual requirements and are necessary shipping dates."

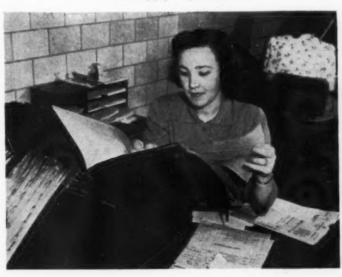
Bolt and nut storage. The parts are kept in jars, and specific locations are assigned. Individual bin cards identify the part and show maximum and minimum stock quantities. Where more than one item is kept in a bin (indicated by circles) a special form of consolidated bin card is used.

Periodic overhaul discloses a defect in a crankcase. The inspector checks the part against the overhaul log, which shows the length of time the part has been in service.

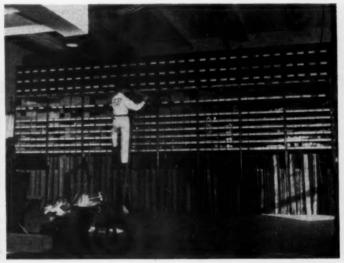




Accurate inventory records are maintained in the Supply Department.



Metals are stocked in sheet, bar, and tubular form.





It is Mr. Brandewiede's contention that the vendor, by partaking of the buyer's intimate knowledge and ability to determine what is needed and the date when needed, feels a responsibility to provide such materials on dates specified. Obviously, such working togther would hardly be the case if the vendor had learned to doubt, or otherwise distrust the buyer, to the extent of not believing the material was needed as indicated. The buyer may then be prone to quote delivery dates which could not be accomplished.

Although the foregoing creed is generally recognized, much planning and training of buyers is involved in order to produce the desired results. The individual buyer should first of all come around to the understanding that the Purchasing function has broadened beyond that of merely buying the item which somebody in-

dicates must be procured.

"Purchasing includes a twofold function," Mr. Brandewiede declares. "It includes in its domain Purchasing as it serves the company, the using agent, and Purchasing as it is related to the vendor, the supplying agent. It is all important that the buyer, in determining the maximum and minimum inventory levels should be equipped with knowledge of company requirements and of economical manufacturing, to order in those quantities that assist the vendor in his planning. From the interplay of governable factors, it is possible to receive from the vendor the best possible price.'

The Purchasing Division of American Airlines, in addition to its responsibilities to negotiate and procure materials, supplies, equipment, etc., is also responsible for handling all negotiations with vendors on warranty items. This program requires a great amount of coordination, particularly with respect to engine parts. propeller parts, engine accessories, and airplane accessory parts. Some

specific part which does not give the minimum guaranteed flying hours of performance must be segregated and in each case analyzed, and then negotiations must be carried to the vendor to enable the company to obtain reasonable adjustment for such malfunctioning or decreased usage. Because of the magnitude of this work and its being recognized as ever recurring, a unit has been established in the Purchasing Division whose sole function and responsibility is to handle such negotiations.

These negotiations in the case of certain items go beyond adjustments for minimum hours of performance. For example, in the event a new aircraft tire requires replacement after two or three landings, the cost of the replacement is discussed with the vendor, as well as an analysis to determine whether the low usage is the result of some defect in that particular casing. This procedure also holds true in the replacement of other major and expensive accessories.

To accomplish these economies consistently, the Maintenance and Overhaul Departments are alerted to all items covered by warranties so that failures will be brought to the attention of the Purchasing Division for negotiation with the vendor for such adjustment possible. This coordination is all important, as the part might otherwise be repaired with

replacement parts, the defective part then cast aside and the cost would then be buried in operating expenses.

Because warranty items generally comprise the more expensive type of equipment, the careful watch on performance outlined in the foregoing constitutes one of the more important sources for reduction of inventory on the shelf. For certain items, American Airlines follows performance very closely by keeping a log of each particular item according to serial numbers. (For a detailed description of this phase, the reader is referred to the article, "Maintenance Surveys Guide Purchasing", in the March 1948 issue of Purchasing, p. 118.)

Worthy of reemphasis in the direction of inventory reduction, is the policy of the Purchasing Division to have vendors ship from their warehouses which are geographically nearest to the using depots. This also includes retaining stocks in the vendor's warehouse until shipping dates are indicated. In the case of tires and bulky equipment a considerable saving occurs. American also reduces inventory on the shelf in the case of items which are in transit for repair or maintenance. Negotiations are arranged with vendor so that the latter makes available a closer repair center to certain of American's depots.

The current stock bin card identifies all stock items, with pertinent information, at their proper location in the storeroom. When more than one item is kept at a specified location, a consolidated form of bin card is used.

BIN No	MAXIMU	UMMIN. PURCH. QTY
SECT. No	MIN	UNIT OF MEASURE
PART No		USED ON
DESCRIPTION_		
VENDOR		CLASS
STATUS		
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	n ©	
		K BIN CARD
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PURCHASING policies, purchasing principles (or ethics), and purchasing practices, are terms so closely inter-related as to make advisable the use of an introductory statement of delimitation at the outset of any discussion concerning any one of them.

Principles are though of as being universal in application, such as the condemnation of commercial bribery, the sacredness of confidences, etc. Purchasing practices might be related to procedure, such as the practice of checking invoices in the purchasing department rather than in the accounting department. policies, strictly speaking, pertain to matters wherein, if action is not taken in accordance with conscious decision or direction, it will probably follow caprice or chance. policy matters are such as could be decided one way by one firm and another way by another firm and neither one need be in the wrong, for instance, the matter of purchasing for employees.

Having made the distinction, if we propose to discuss policies rather than principles or practices, we must immediately concede that many policy matters might shade off toward ethics on the one hand and toward practice or precedent on the other. We must also recognize that should we draw up a specific statement of company policy by which to guide the purchasing activities of our respective firm or institution, most likely we would not confine its contents to purely policy matters but would probably include a mention of some points of ethics and perhaps some statement of current procedural practice.

The Value of Stated Policies

The primary value in having or in developing definite decisions on policy matters is in enhancing consistency of operation. Consistency has application in two different planes: One plane of consistency is timewise. To establish an effective policy with regard to, say, concentrating the orders with fewer preferred suppliers as opposed to a policy of spreading the orders around more thinly, would mean that such a policy would be in effect next year and the year after, as it is this year and was last year. Then whatever values such concentration or diffusion of patronage may be made to yield may be realized upon to the full. The other plane of consistency is that the policy decision applies company-wide, which means that all branches and all de-

Purchasing Policies

In every purchasing operation, decisions as to conduct must be made. Why not set a consistent course of action by making the basic decisions soundly and permanently?

By Leslie F. Robbins

Purchasing Agent University of Colorado Boulder, Colorado

partments of the company would observe the same policy decisions in all normal situations.

Our next concern about policies might be in discovering some logical basis for classifying various policy matters. It might be helpful to think of four distinguishable classes of policy decision: first, general types; second, the 'either-or' type, where the decision will be either for or against, either we do or we don't, as for instance, the granting of testimonials and endorsements; third, the degree or quantative type of decision, where the choice is as to what degree or extent the practice will be followed (An example of this type might be the degree of forward buying or speculation to be indulged in); and fourth, decisions on those policy matters which skirt the consideration of ethics and principles so closely as to require discriminating guidance, as for instance, the distinction between price negotiation and 'chisel-

Just as there is room for differences of opinion as to which policy should be adopted, so also there is room for differences of opinion as to which class to assign to any one of a list of possible policy matters. One person might classify a certain policy matter as being one of degree whereas another might consider it to be in the either-or class, and vice versa.

It might be well to select a few from among the large number of possible policy questions and try to classify them and to suggest possible factors which might enter into the determination of the particular policy to be adopted.

General Policy Matters

Who helps to make policy? It would almost seem unnecessary to

proclaim that whenever purchasing matters are being considered in policy making circles, the purchasing agent will be in on the discussion.

Authority of the purchasing department to determine or to change specifications. This power will differ from firm to firm depending upon the qualifications of the purchasing personnel and the types of commodities they buy. As a rule, the greater the variety the less the opportunity for a buyer to qualify himself to write authoritative specifications for all those items. In such cases the user will more likely be the final authority.

Loyalty to our own people. Nothing is so devastating to morale as to be uncertain whether top management is going to back up the people on the firing line when matters are in dispute. It is well to let the folks know that so long as they sincerely abide by the stated policies and do not commit the firm beyond their authorized limits, they will have the loyal support of the entire organization.

Whether to negotiate, to arbitrate, or to sue. It is easy for the unthinking to pontificate, "Keep out of lawsuits", but many corporate responsibilities require legal substantiation for the settlement of claims and differences in order to avoid personal liability. The legal department should help the purchasing department to establish a policy to guide it in the prosecution of adjustment claims.

For a cooperative attitude. A cooperative approach to such a function as purchasing is usually better than the raw exercise of authority, but purchasing people—like others—are prone to forget. In a statement of policy it would be well to express the attitude of cooperation. That

goes for intra-departmental cooperation, for cooperation with other departments, and for relationships with suppliers and the public generally.

Goods on approval. The practice among vendors of offering goods on approval has become so prevalent that it might be well to develop a policy with regard to it. It is evident that not all such offers can be accepted in sincerity. Might it not be effective for the company's policy to call attention to the implied warranty in all purchases?

Samples for testing. Most buyers will prefer to choose selectively the classes of goods for a program of testing preparatory to standardizing on one brand. They will usually prefer to have the samples bought on the open market rather than risk a conscious or unconscious selection of

might supply gratis.

Adjustment of claims. Various policy matters cluster about the function of negotiating for adjustment of claims. One policy decision might be that the buyer who negotiated the purchase should initiate the negotiations for the settlement of the dif-

favorable samples which the vendor

Too many emergency purchases. An adequate job of procurement can not be performed if there is not adequate anticipation of the need. If a department or a person is continually delinquent in this faculty of foresight, let there be a consistent policy for dealing with the situation.

Policy as to association membership. Membership in an association of purchasing agents should be made to yield real values in education and public relations. As in the case of other officers and their association memberships, if the P.A. or any of his staff are given a membership at company expense, he should be expected to participate actively and should he be elected to an office he should be expected to discharge his duties with credit to himself and to his firm.

"Either-or" Policy Matters:

Granting endorsements and testimonials. Some firms and institutions find it expedient to give or exchange a favorable advertising plug, but such testimonials are sometimes allowed to be used without the endorser realizing the compromising position in which he is placing himself by impli-

Purchasing for employees. Some producers, such as mining concerns, have found it desirable to operate a commissary from which their employees may buy personal needs at

favorable prices. Similar considerations might impel some firms toward a policy of using their purchasing advantages for the benefit of their emplovees. On the other hand, the practice often leads to certain abuses and difficulties. The advantages should be weighed against the disadvantages and whatever is done for some employees should be available to all.

Union label. A buyer might find it advisable to set up a policy of giving preference to union made goods, at least where other factors are equal, if the firm hires a large number of trade union members.

Keeping prices and quotations confidential. In governmental purchasing the policy in this respect is often made by statute. Bids may be required to be open to the public or prices paid be disclosed to competitors after the order has been placed. In private and industrial purchasing there often are justifiable reasons for keeping all price information confidential. This may be a matter for policy determination.

Giving business to price cutters. Where there is qualified personnel and adequate inspection service, there is greater safety in buying from sources considered to be price cutters. The question of whether any responsibility develops upon the ethical buyer to help a producer to maintain his arbitrary resale price schedule imposed upon his distributors, may need to be answered. There should be consistency in this matter with the resale price policy of the sales department of the buyer's own

Bid security. A policy should be set up as to the requiring of bid bonds and performance or delivery bonds on the more significant pur-

chase contracts.

Price emphasis or quality emphasis? Prices sometimes follow quality up and down the scale and thus relative value may be found at any one of several points along the curve. It may be advantageous to set up a policy leaning definitely toward one end or the other of the price-quality spectrum.

Buy or make? It might seem elementary to decide this matter strictly on the basis of comparative costs and comparative quality. However, there may be questions: What items of overhead should be pro-rated to the cost? Will extra labor be required? Conversely, do we need the extra work to keep key personnel employed in slack seasons?

Concentrating on few suppliers or spreading the orders around? Each of these opposing policies has poten-

tial values under varying circumstances. Modest quantity requirements of a commodity would promise more benefit from concentrating for the sake of reaching the higher discount brackets. Heavy quantity requirements might seem to advise spreading the business in order to achieve diversity and insure continuity of sources of supply.

Policy Matters of Degree:

Degree of centralization of the burchasina authority. This degree must be clearly set forth in a statement of company policy and a copy placed in the hands of all officers and employees. As new members come into the organization they must be appraised of the policy.

Degree of severity in dealing with cases of unauthorized purchase. Infractions of the purchasing rule will probably occur. Circumstances alter cases, but consistency in handling them will be definitely advantageous.

Degree of reciprocity to be practiced. A decision on this point will include arguments which have flourished so widely as to need no repetition here.

How much premium, if any, to pay local sources as against outside sources? The considerations involved in this question would parallel those involved in the degree of reciprocal buying to be indulged in.

Degree of forward buying. Most buyers now realize that to buy too little or too late may be just as truly a speculation as to buy too much or too soon. If all the factors in prospect are susceptible of anticipation the proper time and amount to buy is a simple matter of formula. Usually, however, those factors can not be accurately forecast, so someone must decide. Somewhere along the line, market predictions and anticipated needs must be translated into purchase orders. Policy should guide judgment and fix responsibility.

Policy Matters Involving Ethics

Accepting favors from vendors. A statement warning against areas of conduct approaching commercial bribery should be furnished to buyers, to foremen, and to any employees who help to write specifications and choose vendors. Vendor firms should be apprised of it.

Chiseling. It is one thing to negotiate for a better price when the facts indicate that one is in a relatively bad price position; it is something else again to haggle and try to obtain price concessions by means of false-

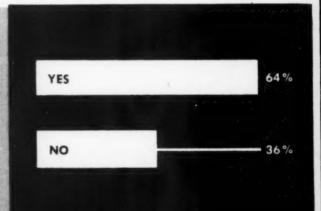
(Please turn to page 334)

The GRAY MARKET

Fact or Fiction?

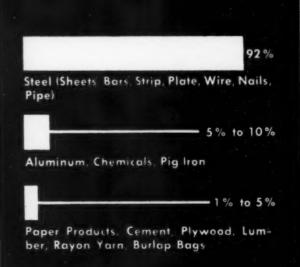
Is the "gray market" one of the temporary dislocations resulting from the war effort, or has it become a permanent fixture in our economy? Public interest in the answer has led to extensive discussion and resulted in Congressional investigation. For an on-the-spot examination of the problem, we queried the men who would usually be the first recipients of irregular offers of commodities — industrial purchasing agents. Presented here are the composite replies of a cross section of purchasing agents in all parts of the country on their experiences with "gray market" activity, and their opinions on causes and cures.

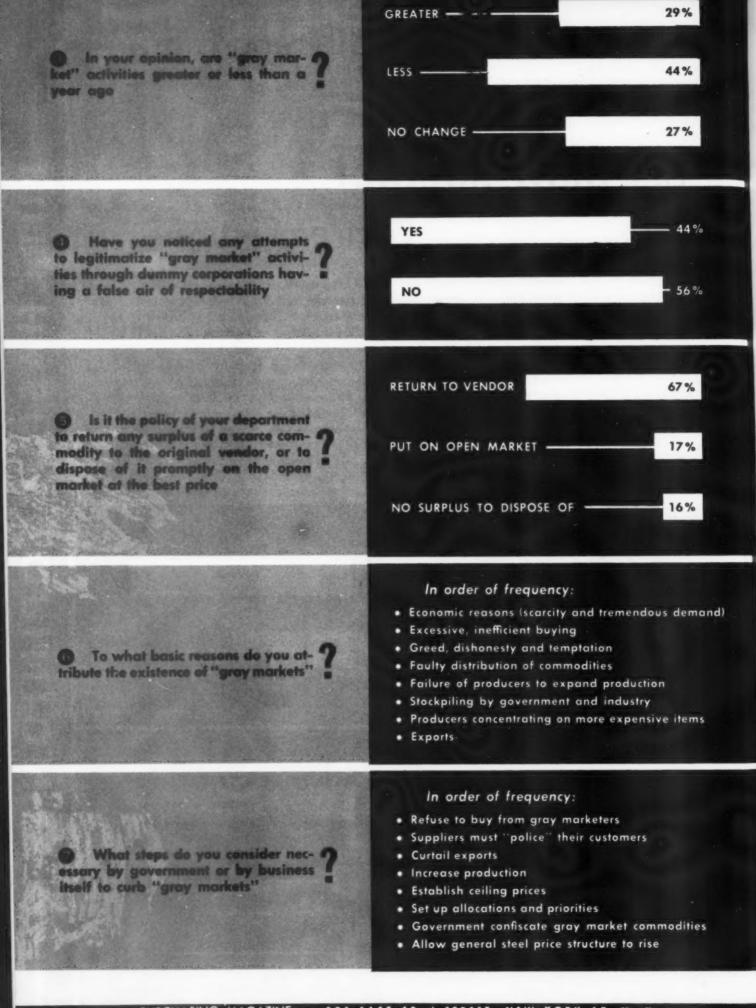
1 Is your purchasing department currently receiving any "gray market" offers



② If so, what commodities are being offered*

 Some respondents listed more than one item on this question, so percentage factors total more than 100.





Building Better Relations With Other Departments



By David L. Wilt Purchasing Agent University of California at Los Angeles A clear statement of policy, regulations and standard procedures, supplemented by personal conferences, avoids misunderstandings, eliminates confusion and delay, and enables buyers to give more satisfactory procurement service

No the last few years our student body has increased to 13,200, which has necessitated the hiring of many additional faculty and staff members. New colleges, departments, research contracts, and activities have been added, such as engineering, medicine, law, geophysics, theater arts, radiology, and ornamental horticulture. New deans, chairmen of departments, and staffs for all these have been recruited from widespread backgrounds such as industry, war research jobs, the armed services, and educational institutions.

The problem in the business and purchasing departments has been two-fold. The first is that of explaining our business methods and procedures to the new group of faculty and staff who are unaccustomed to university systems. The second problem has been to acquaint faculty and staff who have been with us for some years with changed and simplified procedures which have developed from the testing grounds of years of experience and the university's widespread governmental contracts for war research and training.

In the spring of 1947, we began to prepare a number of mimeographed sheets on subjects dealing with purchasing and business procedure. Each subject was limited to one page. The original plan was to use these somewhat as form letters to answer questions on procedure which were repeatedly raised by telephone conversations, conferences, letters and requisitions. Since that time we have developed these mimeographed sheets on the following subjects:

Memorandum regarding the preparation of general requisitions

This article is based on an address given at the 27th annual convention of the National Association of Educational Buyers held at Columbus, Ohio, on May 5, 1948.

Regulations covering use of blanket orders

Regulations covering rental orders Policy in regard to furnishings for new permanent buildings

Memorandum regarding inventory regulations

Summary of items stocked by

Each of these sheets was prepared with the idea of making a simple, concise statement regarding facts or 1 ocedures. In the preparation of the sheets we found that it was good discipline for us to attempt summarizing the procedures which we thought would do the job best and in the most efficient manner. Some of the sheets were rewritten as many as eight times before mimeographing. The next time we mimeograph some of them there will be certain changes which will be made to clarify points which have appeared unanswered in the original version.

In talking to staff members who come to our office regarding their purchasing problems, we pull out the appropriate mimeographed sheet, if there is one to cover their problem, and read it together. In this way our purchasing department staff members

always give each department the same answer and the departments have a clear cut explanation of the procedure which we feel will best help them.

Favorable Reaction

We have found an immediate favorable reaction among faculty and staff to these instruction sheets. Only two of them were distributed generally, the balance being used as the need arose, where they would be applicable.

An example of the way in which these forms work is in connection with the memorandum regarding the preparation of general requisitions. Under our system where requisitions must be priced and lined in the accounting department prior to the issuance of the purchase order by the purchasing department, it is time consuming if departments include a large variety of materials on one general requisition. For instance, if a requisition reaches us listing garden hose, an electric fan, a thermostat, and plywood, it can be seen that it is necessary for us to get prices from a minimum of four different sources before the requisition can be completely priced. If the quantities are large, we obtain competition and that multiplies the number of quotations that are necessary. If one of the items is difficult to obtain and there is a delay for any reason, then the entire requisition is held up.

Paragraph 2 of the memorandum on general requisitions requests departments to prepare requisitions with one classification of materials only. With the use of this memorandum we have been able to obtain good cooperation from the requisitioning departments in this regard. If we now receive a general requisition covering a multitude of types of materials we make a practice of sending it back to the department with a copy of the memorandum with this paragraph marked as the explanation of why several requisitions can be handled faster than one that is mixed.

Source Information Asked

Another example of the help which this memorandum has been to us can be given in connection with paragraph 5, which asks departments to include on the requisition such information as they have in regard to source or estimated prices.

Our problem is to supply a widely diversified consumer demand for the most unusual types of items which many times do not re-occur. Our scientists are experts in their own fields and keep abreast of the latest literature and have generally a good knowledge of where some of the more difficult items can be purchased. There was for some years a reluctance on the part of the requisitioning departments to furnish us with the information which they had on hand from their reading or professional knowledge. As a result the buying process was slowed down while we explored territory which was new to us but had already been well covered by the department in their reading and exploratory correspondence regarding technical mat-

With the success which this paragraph 5 has had in urging departments to give us the information which they had in their files, we have been able to save considerable time. Our centralized purchasing system does secure the commercial prices and handle all negotiations for actual purchases, but we are now getting better information from departments as to peculiar sources of unusual items and this has been a great help to us in speeding up purchasing.

A copy of the regulations covering the use of blanket orders is sent out to departments with each blanket order which we issue. These are authorizations giving them the right to withdraw materials from firms which we select or to do unusual things such as purchase miscellaneous small quantities of certain types of materials, insects, specimens, or other items while they are traveling. Prior to the issuance of this memorandum

UCLA Purchasing Office



REGULATIONS COVERING RENTAL ORDERS

Attached hereto is a purchase order covering rental for your department. The Purchasing Department de your attention to certain matters which should be a bhose responsible for the use of this type of trans

- The period of time for which this equipm has been rented should be noted. Rental orders do not extend beyond the stated p
- About fifteen days before the expiration it will be the responsibility of the reing department to either renew or cance

UNIVERSITY OF CALIFORNIA FURCHASING DEPARTMENT LOS ANGELES, CALIFORNIA

INFORMATION FOR FIRM REPRESENTATIVES

David L. Wilt, Purchasing Agent Richard A. Sundeen, Storekeeper

Kenneth A. Weydert, Buyer

The University of California desires to call your attention to the following points in connection with our commercial dealings;

- 1) Salesmen and firm representatives visiting the University of California, Los Angeles, should direct their calls to the Purchasing Department, Room 5, Administration Building. Our mmiling address is 406 Hilgard Avenue, Los Angeles 24, California; telephone Bradshaw 2-2171 or Arizona 3-0971. Temporary parking for automobiles may be secured in the parking lot adjacent to the Administration Building by explaining to the police officer on duty that you are making a call on the Purchasing Department.
- 2) Salesmen are requested not to make any calls on University employees or departthe Purchasing Department. The Furchasing Department
 let us know the results of your visit by sending us a
 y have submitted.

on demonstration or lean or any supplies or material st securing permission from the Purchasing Depart-

UNITYERSITY OF CALIFORNIA

The following are some of the items normally stocked by the Storeroom:

Rubber aprons, battery jars, beads, be Jar caps, casseroles, clamps, corks, coverglass, cr. cylinders, dessicator plates, drying tubes, evaporat funnels, glass plates, glass rod, Jars, gummed labetri dishes, pipettes, racor blades, slides, spatul stoppers, test tubes, thermometers, tubes-connecting viels, watch glasses and wire gauge

FIRST AID. Adhesive plaster, bandaides, absorbent a CHEMICALS. Acetone, acid, ammonia hydroxide, alcoh

SEMORATION REGARDING INVENTORY REGULATIONS

The University of California is required by law to LLintain inventory responsibility for the equipment which it owns. The Inventory Department is operated for this purpose as a part of the Purchasing Department. We desire to call your attention to the regulations in regard to inventory matters:

(1) The Inventory Department maintains a card record of all equipment items purchased which cost more than \$2.00, and are capable of lasting one year. The department making the purchase, receiving the gift, or custody of the equipment is charged best items. The department chairman has juriediction and charged to his department.

ent maintains a master 3" x 5" record file of all at departmental inventory records be maintained in-department chairmen. The Inventory Department will t records after which they should be maintained by

ports regarding inventory matters, it is requested

MEMORANDUM REGARDING THE PREPARATION OF GENERAL REQUISITIONS

The Purchasing Department suggests that the following points be noted in connection with the preparation of General Requisitions:

1) When it is desired to order any supplies, please check with the University Storeroom at Local telephone 286 or Local 486 to be sure that they do not already stock this item. If they do, then please order it from 15 the secured from the Storeroom should the

Requisition form.

- In preparing the General Requisition form each re those items which can be obtained from one classifica mean that all scientific apparatus should be placed or on another requisition. Psints, electrical supplies, separate classifications of materials should be place Requisitions not exceeding one page in length can be
- If you have one item of a group which is to be si please submit it on a separate General Requisition, a other items on which there is no hurry.
- It will be appreciated if departments will enticipate possible in advance. However, on those items which a give us the date on which the material will be needed member who needs it on that date. So many requisition Department marked "Urgent" and "Rush" that very little
- 5) Please include on the requisition such information sources or estimated prices. Original correspondence is any. If you are specifying an item that is the on please give us the reason for this in detail so as to you about this matter.
- In describing items we can save considerable time description as to catalog number, firm name, color, a which is available.
- On these requisitions on which you are requesting (1) On these requisitions on which you are requesting samples or ordering printing, please subhit enough or so that we can send a suitable semple to each bidder, describing miterials to be constructed should be sent type styles should be attached to the General Requisitype styles should be attached to the General Requisity
- 8) If funds are limited, please use the space at the requisition saying "Total not to exceed _____". The then notify you should the expenditure exceed that am
- Many departments who prepare numerous requisition departmental numbers in the upper left hand corner.

REGUL.TIONS COVERING USE OF BL. NICET ORDERS

Attached hereto is a blanket purchase order. The Turchasing Department desires to call your attention to certain matters which should be understood by those responsible for the use of this type of authorization.

- (1) The time limitations set on the use of this blanket should be watched carefully. Blanket orders do not extend beyond the stated time. Most blanket requisitions terminate at the end of the flexel year, on June 30. The Turchssing Department requests that new blanket requisitions be furnished to them by June 1 if it is desired to have a new blanket erder set up to stert on July 1, unless the blanket comes under the classi-fication of paragraph B, section 2 of this letter, as the Accounting Department establishes these blankets based on previous expenses
- (2) It is the responsibility of the requisitioning department to see that blanket orders d. not exceed the authorized financial limit which is shown in the right hand column.
 - If the blanket has been issued to your department or to s firm, the total amount of the expenditure can be increased, decreased or cancelled by making a request to the Furchasing Department. The request for change should be signed by the chairman or other staff members authorized to sign General Requisitions.
 - (b) If the blanket has been issued to a University service department, such as the Garage, Storeroom, Mimeographing, or Photographic Department or covers such items as travel, telephone, telegraph or freight, than edjustments in the total can be made by notification to the accounting Department.
- (3) Inventorial equipment should not be purchased on any blanket requisition. Inventorial equipment consists of those equipment items having a cost of \$2.00, or such as electric clocks, tools, filing equipment and other similar items. Should any question arise as to whether or not an item is inventorial, please check with our Inventory Department on Local Telephone 410.
- (4) This blanket purchase order has been approved for a specific purpose which we hope has been clearly defined. It is necessary that use of the blanket be confined to the purchase or expenditure stated.
- (5) If there ere any questions regarding the use or interpretation of your blanket orders, please call the Turchesing .gent.

Typical mimeographed instruction sheets. referred to in this article



Section of the University storeroom (Chief Storekeeper R. A. Sundeen at right)

regarding the use of blanket orders we found that the departments were using these order numbers for a variety of things which it was never the intention to cover. These mimeographed sheets have made it clear to the departments that blanket authorities are limited and intended only for the specific use for which they were requested.

Budget Charges Clarified

We are in the midst of a tremendous new building program, and many of our departments are planning to move into new buildings or are planning the program which soon will be recommended by them to the architects. There was considerable discrepancy in the viewpoints of departments regarding the equipment which would be purchased for their new quarters. George F. Taylor, our business manager, provided a statement of policy in regard to the furnishings for new permanent buildings. Since that statement was issued in February of this year it has clarified our entire position on this matter, so that there is a good understanding as to which items will be charged against the building program and which items of equipment will be budgeted against the department's own expense.

The memorandum on inventory regulations is somewhat of a localized problem in that it provides information to the various departments as to our California State Regulations on this subject. Paragraph 8, dealing with loans, covered a matter which had proved troublesome for many years, since there is not a clear understanding by departments of the procedure to be used with different types of loans. In an institution of our character it can be readily understood that there are many agencies who desire to borrow equipment from us. Paragraph 8 describes the procedure which is to be followed in that case. Occasionally we borrow equipment from some other research institution or commercial firm, and a specific paragraph tells the department how to arrange for this. We use this memorandum regularly as a form letter to questions regarding loans of equipment and other physical property questions.

Instructions to Vendors

We also have a mimeographed form entitled "Information for Firm Representatives" which is handed to each vendor's salesman the first time he calls on us. We have had a good reaction from it and it has enabled us to have excellent relationship with these men, many of whom are just as busy as we are and like this systematic way of proceeding with our business. It furnishes them with a statement of our policy, and the names and locations of the affiliated branches or institutions in addition to the Los Angeles Campus, for which we do the buying.

The summary of stock in our storeroom is necessarily brief and somewhat sketchy. However, we felt that
a sheet of this type had one advantage
over a general catalog in that it would
be more easily read and probably
used oftener. When we receive general requisitions in this office which
would normally have orders issued
to firms, and the material is in stock
in our storeroom, we now send to the
department this summary sheet together with the memorandum regarding the preparation of general requisitions for their information.

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Personalized Conferences

In July, 1947, Mr. Taylor, our business manager, wrote to me requesting that I arrange a series of meetings with new department chairmen and their staffs to discuss purchasing, and business office procedures.

Originally we thought that we might get all of the new chairmen and staff members together in one large meeting and then discuss generally their problems in dealing with the purchasing and business offices. However, it turned out that there was such diversity of questions in specialized fields that we met with departments one by one, which gave more time for specific detailed discussion on their own particular interest.

The last paragraph of Mr. Taylor's letter to me on the subject summarized the theme which we tried to carry out in these discussions.

"I wish you to take the lead in this and make sure the chairmen get the idea that we are trying to help them and not tell them how to run their business. The meeting should be opened for questions, and I think most of the facts will be brought out by questions rather than by giving lectures."

It was with some misgivings that I called the first meeting. This was with the chairman of a new department and his staff of seven, including his secretary. The chairman was an outstanding scientist who had an imposing war record. One of his staff members had come to us directly from being a major in the army. The other academic members of the staff were also men of considerable experience and all but one were new to the University of California.

After opening the meeting with informal questions and answers, a complete set of the mimeographed instruction sheets was passed out to each person. We went over these briefly, and in so doing brought out a number of additional points. The entire meeting took about 40 minutes.

At the end of the meeting, the chairman of the department stated that he had been associated with a number of organizations, including large war research projects, and that this was the first time he had ever been invited early in his tenure to find out how the business affairs were to be conducted. Other members of the staff were enthusiastic about the simplified procedure, since they were anxious to do certain research work that required prompt handling of requirements if a great deal of time were not to be lost.

With the encouragement of this initial meeting I proceeded to arrange similar meetings with other departments. In several of the departments where new chairmen had been added to our staff, we found that some of the members of the departments who had been with the University some years brought up questions regarding procedures which they had used over a period of years. This was particularly enlightening as in some instances we had not known that certain things had not gone right simply because they had never been called to our attention. It turned out that in those cases which were brought up by these "old timers" that the revisions in our system since the war had taken care of the majority of points.

These meetings with departments occurred in the late summer and fall of 1947. Since that time I have had an opportunity to work with them and have gained a firm impression that these departmental meetings were a good investment in time.

Mutual Understanding Helps

There is another point in maintaining good relationships with departments which should be mentioned. We have found that there is a genuine appreciation among the faculty if we will take time to let them know why a purchase order cannot be issued on a requisition which they have submitted, within a certain time of receipt in our office. Most of the requisitions for items of low value or small groups of items can be priced by telephone and the orders placed within a few days from the time the requisition reached our office. The longer lists of items or those from out-of-city sources must necessarily wait while requests for quotations are typed and then returned from the bidders. We are now attempting to notify departments of the reason purchase orders are not issued, whenever the requisitions are in our office longer than 15 days. This is a goal which we have set but

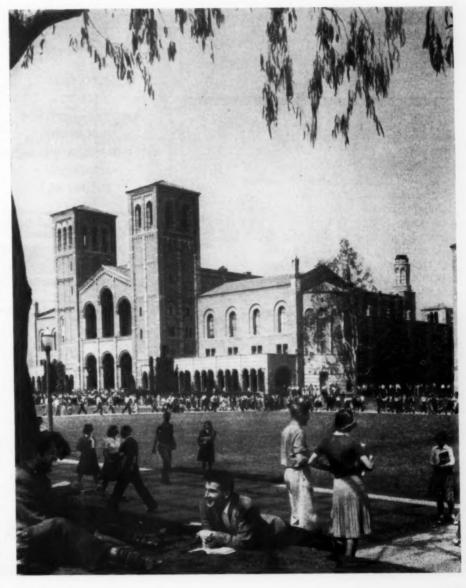
which we have not always been able to keep up with, but when we have been able to do it we have felt that the departments have appreciated this

progress report.

It is too easy for us in the purchasing and business offices, with our crowded work schedules, to stay at our desks and try to keep our paper work up to date. I feel, however, that one of the best investments we can make is to take time regularly to go to departments to talk over some matter which is current, meet the staffs, see their facilities, and to become acquainted with their requirements. This is a difficult thing to find time to accomplish, but I know that it yields large dividends in good understanding. Letters are a poor substitute for this personal contact.

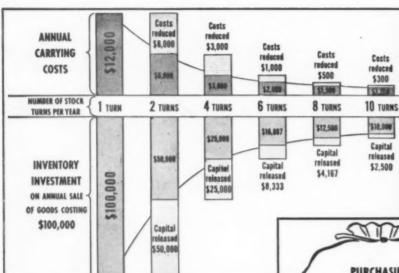
The last point which should be mentioned in connection with the relationship with departments is the constant remembrance that we are service units. Our value to our institutions not only depends upon wisely handling the expenditures but also upon obtaining the quality and types of services and materials that departments need on time and in a manner which is acceptable to them. There are many other points which could be brought up in connection with the relationship of the purchasing and business offices to departments, but that the ones which had been mentioned here will be sufficient to illustrate the point which we all know: that there is a real job to be done in maintaining good relationships with departments which we serve. This is especially true in these days of expanding personnel and the establishment of new systems, for streamlining our office work.

UCLA Campus, looking toward Royce Hall



Inventory, Profits, and Stock Control Records

 These charts and illustrations are reproduced, with permission, from the new Remington-Rand book, "How to Get Profits from Inventories"

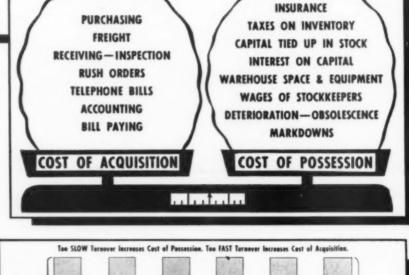


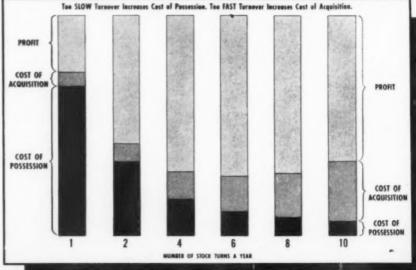
When the rate of inventory turnover is improved several things happen. With each turn, the annual carrying costs (including deterioration and obsolescence losses) are reduced, and substantial amounts of capital are released for other business use.

A major factor in effective inventory control is weighing the cost of acquisition (purchase) against the cost of possession (carrying in stock). This serves as a guide to the most profitable inventory turnover rate—just on the right side of the point where the advantages of quantity purchasing are offset by the law of diminishing returns.

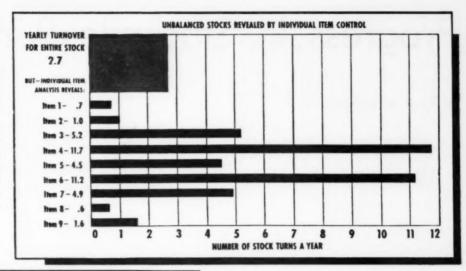
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In virtually every business there is a point beyond which increasing the rate of turnover is likely to increase carrying costs rather than to lessen them. While some costs may be cut as the rate of turnover increases, others start to mount at an accelerated pace, so that total costs are higher and the margin for profit is narrowed.





Using average inventory figures is dangerous because they conceal the unbalanced stock conditions which lead to high costs. In this chart, items 1, 2, and 8 are making only one turn or less annually; thus the cost of possession is excessively high and profits are reduced. But the popular items 4 and 6, turning nearly twelve times a year, show a condition nearly as bad. The rate of turnover is much too fast, and means that while the cost of possession on these items is low, the cost of acquisition is unnecessarily high, so that profits are less than they should be.



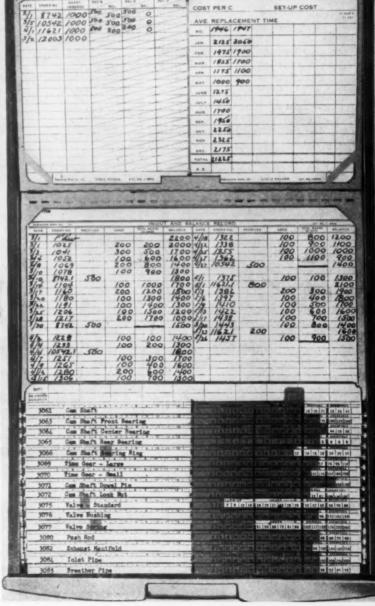
2500

3061 Cmm

No.	or Size	Article							Location	
	3061 Cam Shaft						B-42			
Internals (II.)	ON ORDE	R		RECEIPTS DELIVERIES			DELIVERIES			
BATE	OF BERNO	QUARTITY	DATE	ORDER NO	QUANTIFE	DATE	ONDER NO	QUANTITY	BALANCE	DA
3/5	10542	1000	3/10	8742.	1 500	3/1	Fwid		2200	4
4/1	11621	1000	3/30	8742	500	3/1	1025	200	2000	
5/2	/2003	1000	4/4	10542	500	3/3	1041	300	1700	4
			4/27	10542	500	3/4	1052	100	1600	9
			5/1	11621	800	3/8	1069	200	1400	4
			5/23	11621	200	3/10	1078	100	1300	4
						3/10	8742		1800	
						3/14	1104	100	1700	4
		1				3/17	1160	200	1500	1
						3/20	1180	100	1400	4
						3/22	1191	100	1300	И
						3/25	1206	100	1200	Ŀ
						3/28	1217	200	1000	-
						3/30	8742	_	1500	14
						4/2	1228	100	1400	1
						4/4	1233	100	1300	1
						4/4	10542	1-	1800	H
						4/7	1251	100	1700	14
_										

Here is an example of a single inventory card providing four basic types of information. Its utility is seriously limited because one section of the record always fills up faster than the others. When a new card is needed, time-consuming transfer of information is necessary. Often, only current data are transferred, and there is no provision for a summary record of past material disbursements. Thus the continuous record of trends in use and demand (an important guide for future ordering) is lost.

In the split-card system shown at the right, each type of basic information is segregated on a form, yet all the facts concerning each particular item are centralized on a single visible chart or pocket. Celluloid signals and a marginal scale interpret stock movements and activate the record so that executive and clerical attention can be concentrated on just those items which require attention.



PART NO. 3061

SET-UP COST

COST PER C

Progress in Stockpile Purchases

By A. N. Wecksler

Stockpiling of strategic materials is accelerated under the spur of national security considerations; policies and procedures for the program are stated

PROCUREMENTS for the national stockpile of strategic and critical materials are beginning to emerge as an important factor both in the domestic and international raw materials markets.

During the immediate postwar period, purchasing for the stockpile was curtailed for fear that it would impede reconversion, and by siphoning off materials might create unemployment.

Now two factors have been introduced that will accelerate the program. The first is the present emphasis on national security. However immediate or remote may be the danger of open warfare, it has been decided that this is no time to gamble in the materials necessary to sustain a war economy.

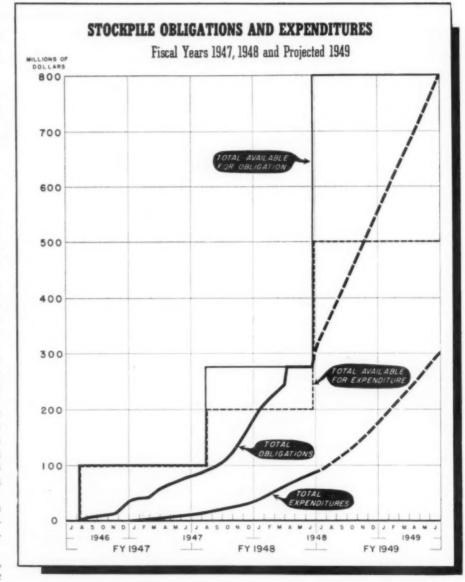
The second is the development of the Economic Cooperation Administration program of large scale shipments of goods and machinery to Western Europe.

Most important immediate returns of economic value that can be expected are the raw materials which the European countries and their possessions can furnish. It is simple logic to obtain from the European countries such needed materials as they can furnish, and to obtain such materials either in the form of ores or in their primary form, rather than as processed materials.

At present, the stockpiling program fits snugly into our national and international policy as an emergency mea-

Beyond these emergency features, there is also considerable evidence that national stockpiling of strategic materials will develop into much more than a purely temporary expedient.

There is a growing recognition that Government can fill an important function by creating a bank of materials on which industry can draw for normal operations, in addition to the function of providing an emergency source for such materials.



This will represent a further incursion of Government into functions hitherto considered a matter for private operators. But, just as there is tacit acceptance of the functions of the Reconstruction Finance Corporation in the area of finance—of atomic energy as being in the public domain

—more grudging acceptance of Government in the field of large power dam projects—the right of Government to create a bank of materials has little opposition.

As in all of the other instances cited where the Federal authority has been extended, the current justification is the national emergency. This is not pointed out to question the validity of the emergency, merely to point up the likelihood that stockpiling of strategic materials will join the other extensions into public domain as a permanent development.

The factors of justification for such a development are many. First, there is the tremendous rate of use at which our speeded industry consumes materials. Any disruption in supply, whether of a war emergency or through other sets of circumstances, could create sharp reactions.

Another basic factor is the dependence on foreign sources for significant portions of total requirements of some commodities, ranging from almost total dependence to marginal requirements. In periods of un-settled foreign commerce, Government-sponsored procurements have the dual advantage of a Governmentto-Government approach, plus the ability to bargain for large tonnages.

Still another factor is the position of the Government in being able to sponsor development of foreign material resources, such as increased output of lead from Greece, modernization of mining, and handling of ores from other countries.

One of the by-products of the development of a large stockpile of strategic materials is stabilization of price. A Government buying program, when the Government is the major consumer of the commodity and is willing to accept all offers, constitutes a guaranteed market at a

stable price.

Most of these justifications would have little weight in gaining Congressional appropriations for a stockpiling program. On the other hand, national security and national defense are considerations that quickly untie the public pursestrings for whatever venture, either physical or economic, that is considered necessary and feasi-

Resultant developments are byproducts, which are likely to be retained beyond the period of the

emergency.

As to the policies and mechanics of stockpiling, the Strategic and Critical Materials Stock Piling Act placed responsibility on the Secretaries of War, Navy and Interior for determining what materials and what quantities of each shall be stockpiled. Stockpiling functions assigned to the Secretaries of the Army, the Navy and the Air Force were delegated December 19, 1947, with the concurrence of the Secretary of Defense, to the Munitions Board as the focal center of stockpiling operations.

PURCHASE OBJECTIVES

Material	Amount to be contracted for during July-September 1948 for delivery before 30 June 1949
ASBESTOS Chrysotile Amosite	1,100 short tons 1,900 " "
BAUXITE Metal grade Abrasive grade	435,000 long dry tons** 68,000 " " "
BERYL	250 short tons
BISMUTH	100,000 pounds
CADMIUM	300,000 "
CASTOR OIL	15,000,000 " **
CHROMITE Metallurgical Refr. Type A	30,000 long dry tons**
COCONUT OIL	5,000,000 pounds
COLUMBITE	1,100,000 " **
COPPER	30,000 short tons*
CORDAGE FIBERS Manila Sisal	6,000,000 pounds 6,000,000 "
CORUNDUM	125,000 "
DIAMONDS, INDUSTRIAL Stones Crushing bort	350,000 carats** 100,000 " *
GRAPHITE Amorphous lump Flake (Crucible) Flake (Lubricant)	1,000 short tons** 300 " " **
KYANITE	1,000 short dry tons
LEAD	16,000 " " "
MANGANESE ORE Battery Metallurgical	20,000 long dry tons** 350,000 " " " **
MICA Muscovite block Muscovite film Muscovite splittings Phlogopite splittings	80,000 pounds** 125,000 " ** 1,000,000 " ** 120,000 " **
MONAZITE	500 short dry tons**
NICKEL	15,000,000 pounds**
PALM OIL	7,000,000 "
PEPPER	1,000,000 "
QUINIDINE	6,000 ounces
RUBBER, NATURAL Crude	25,000 long tons®
SHELLAC	1,500,000 pounds
TALC, BLOCK	250 short tons**
TIN	4,500 long tons**

^{*}Quantity shown refers only to purchases from the normal commercial market.

^{*}These amounts are the presently anticipated total amounts to be purchased the entire period July 1948 to June 1949 for delivery prior to 30 June 1949.

Progress in Stockpiling

	\$ /	Aillions
Gross Delivered Value of Stockpile Objectives	3,403	(100.0%)
Material on Hand		
From Public Law 117 Sockpile 86 (2.5%)		
From Surplus Property		
From Public Law 520 Deliveries		
Total on Hand	597	(17.6%)
Balance of Requirements not on Hand	2,806	(82.4%)
Materials in Sight		
Further Surplus Property 29 (0.9%)		
Deliveries against Present Contracts 223 (6.5%)		
Total in Sight	252	(7.4%
Balanced to be Purchased	2,554	(75.0%
Unobligated Funds Available	490	(14.4%
Funds not yet Available	2,064	(60.6%

To facilitate quick and coordinated action on policy questions, the Munitions Board reconstituted in 1943, and has since maintained in frequent sessions, an inter-agency group known as the Strategic Materials Committee. On this committee are represented all the various Departments that can assist in the stockpiling program. Purchase objectives and plans for each six-month period are formulated by the Munitions Board with the advice of the Strategic Materials Committee.

To facilitate maintenance of a proper relationship between the national economic and military interest, the Munitions Board constantly apprises the National Security Resource Board of stockpiling plans and operations.

In determining what qualities, types, and specifications of materials are best suited for stockpiling, the Munitions Board is aided by Industry Advisory Committees, formed by the Board with concurrence of the Department of Interior. The Industry Advisory Committees provide guidance also as to methods for storage and rotation of stockpiling materials by the Bureau of Federal Supply of the Department of the Treasury.

The Departments of Agriculture and Interior conduct investigations as to ways in which domestic production of critical and strategic materials can best be spurred.

In carrying out its stockpiling

function, the Munition Board taps three separate sources of materials: reserves held by various Government agencies and found to be surplus; domestic materials privately owned and offered for sale for present or future delivery; and reserves and production abroad. In each case the actual procurement is carried out by the Bureau of Federal Supply.

The Munitions Board is instructed to accept any materials held by another Government agency and found to be surplus, provided that the material meets stockpile specifications and is not urgently needed by private industry. Such transfers do not require disbursal of funds appropriated for stockpiling. All Federal agencies are required to cooperate in this program and surpluses thus made available are taken in charge by the Bureau of Federal Supply for transportation and storage.

Domestic procurement is handled by the Bureau of Federal Supply in conformance with instructions from the Munitions Board. On routine purchases the Bureau acts in accordance with clearly defined policies. On purchases requiring policy guidance, it consults with the Munitions Board as to the factors of quality, quantity, price, and timing of delivery.

In foreign purchases, the Bureau of Federal Supply also acts as the operating agency. In instances in which export restrictions by another

country threaten to hamper delivery or procurement, the Munitions Board asks the Department of State to undertake to ease the conduct of the negotiation. It is anticipated that as the Economic Cooperation Administration becomes increasingly active, substantial quantities of materials will flow overseas into the stockpile. Consequently, a working group has been set up to provide for the closest cooperation among the Munitions Board, the Bureau of Federal Supply, and the Economic Cooperation Administration.

In maintenance and administration of the stockpile, as in procurement, the Bureau of Federal Supply plays a major part. Physically, the bulk of the stockpile is stored throughout the United States at 70 different military depots, 10 private facilities, and 3 stand-by defense plants; in two cases low-grade ores have been stored on public lands with the permission of the Department of Interior. In addition, a storage plan for each individual item in the stockpile was prepared by a Stockpile Storage Committee representing the Departments of the Army, the Navy, the Air Force, Treasury, Agriculture, and Interior. A manual on stockpile storage practices, for use by personnel in charge of all storage depots, was completed by the Stockpile Storage Committee in May of this year.

The Bureau of Federal Supply maintains full records of the status and condition of stockpiled materials, and implements systematic plants for rotation of perishable stores. Advice on care and handling of stockpiled materials, submitted to the Munitions Board by the Industry Advisory Committees is forwarded to the Bureau of Federal Supply for action.

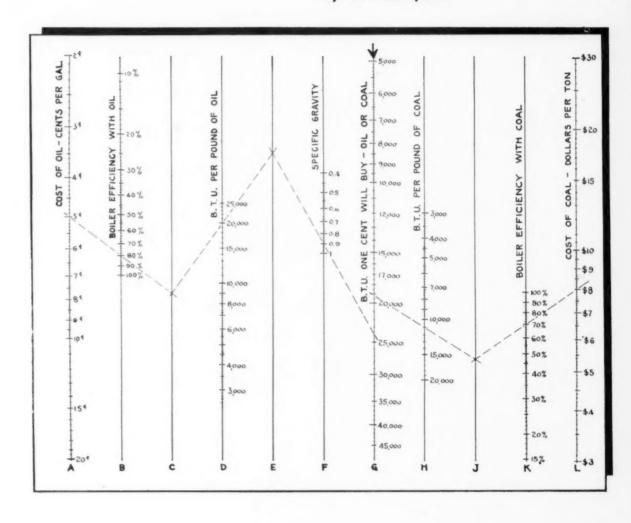
The procedure for release or use of material in the stockpile precludes any form of "dumping" or price influence - a necessary safeguard in dealing with such large quantities of commodities. Items found no longer critical or strategic may be sold only after six months' public notice, and after a full description of the disposal plan has been submitted to the Congress. Under terms of the Strategic Critical Materials Stockpiling Act, "The plan and date of disposition shall be fixed with due regard to the protection of the United States against avoidable loss on the sale or transfer of the material to be released and the protection of producers, processors, and consumers against avoidable disruption of their usual markets." The intent of Congress is made clear in the Act that

(Please turn to page 330)

Coal vs. Fuel Oil

A quick graphic method of checking comparative values in fuel buying

By W. F. Schaphorst



T is frequently necessary for the fuel buyer to make a cost comparison between fuel oil and coal under prevailing market conditions. Ordinarily rule-of-thumb methods based on a generalized price factor alone are likely to be misleading because of variations in the heat values of different grades of coal and oil and variations in boiler efficiency when using the different types of fuel.

Here is a chart, developed by the writer, which takes these factors into consideration and comes up with an answer in terms of the really significant question—How many Btu's can I buy for one cent, coal or oil? After all, you are interested in buying heat units.

Simply draw a line through the cost of oil (Column A) and boiler efficiency with oil (Column B) to the intersection on Column C; then zigzag from that point through the Btu per pound of oil (Column D) to the intersection on Column E; continue through the specific gravity of the oil (Column F). The intersection of this line on Column G indicates the number of Btu's that one cent will purchase.

Now start at the right. Draw a line through the cost of coal (Column L) and boiler efficiency with coal (Column K) to the intersection on Column J; zigzag from that point through the Btu per pound of coal (Column H). The intersection on

Column G shows the number of Btu's that one cent will purchase, and there you have, ready made, the telltale comparison of value, in terms of the significant common denominator.

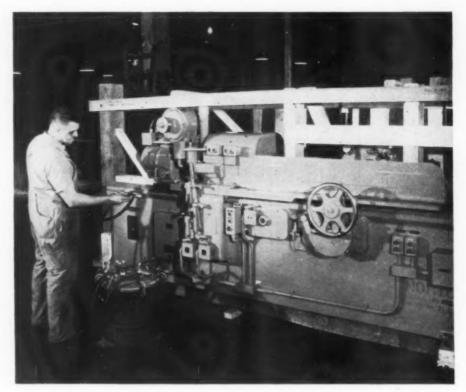
The dotted lines on this chart show a comparison between oil at 5¢ per gallon, with specific gravity of 0.9 and 20,000 Btu's per pound, giving 80% boiler efficiency, and coal at \$8 per ton, having 11,000 Btu's per pound and giving 70% boiler efficiency. In this special instance, one cent will buy 24,000 Btu's of oil, or a little more than 19,000 Btu's of coal. Oil has an important advantage under the conditions of this particular problem.

Rust Prevention for Equipment in

Modern protective oils and compounds help to maintain working surfaces of industrial equipment and parts in operating condition

By Robert R. Thurston
Technical & Research Division
The Texas Company
New York

This article is presented by special arrangement with The Texas Company, being reprinted from the October 1948 issue of "Lubrication", a technical publication devoted to the selection and use of lubricants, copyrighted by The Texas Company.



Applying a rust-proofing compound to machinery before crating and shipping.

A NY equipment manufactured from iron or steel is confronted, starting with the moment of fabrication, with a battle against the destructive effects of wear when in use and corrosion when idle. Wear can be minimized by proper lubrication of all moving parts, but corrosion must be guarded against not only while equipment is in use but especially when it is temporarily idle or in storage.

The principal element of most machinery and equipment is iron. Iron does not occur in nature as the metal, but combined with other elements, largely as an oxide. When iron oxide, or ore, is reduced in the blast furnace, the free metal is obtained, which is further improved by the addition of small amounts of other elements to give the toughness and hardness required in steels for various machines of industry. The forces of nature, however—water plus oxygen in the air—combine in a ceaseless effort to return metallic iron to iron oxide. It is as though nature rebels

at man's success in making useful steel from ore by tearing down what man builds. Indeed, nature will return all iron and steel articles to the oxides unless constant vigilance and protection is afforded.

In order to maintain our machines in satisfactory operating condition, the slightest corrosion or appearance of rust (iron oxide) must be prevented from forming on the working surfaces. Modern machined parts such as shafting, cylinders, ball and roller bearings, etc., are finished to extreme accuracy and smoothness. The development of rust on these surfaces can easily destroy the value of these machines by changing the precise dimensions or by roughening a polished working surface.

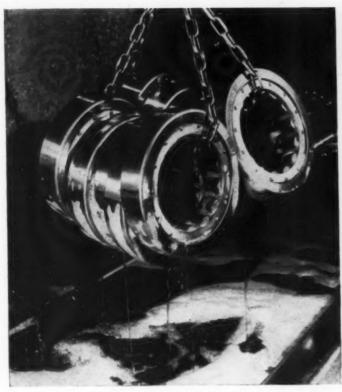
Rust can occur just as easily on the exterior of equipment if not protected. It is not as destructive, however, to the performance of the machine, as interior rusting, and it can be prevented relatively by the use of heavy rust preventive compounds or paint. The prevention of rust on the

interior and working surfaces of machines is not only more important, but frequently more difficult to accomplish.

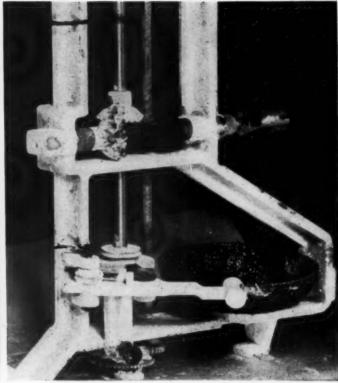
Most machinery can be well protected against rust while in motion with ordinary lubricating oils or greases. Some equipment, however, is operated under conditions so severe that special lubricants are required to prevent rusting in the presence of air and moisture. Such cases are the steam turbine, hydraulic equipment, paper machines, pneumatic tools, etc. All equipment in storage is exposed to rusting influences unless either packaged to keep out moist air or protected with lubricants designed to prevent rusting in the presence of moisture and air.

Inhibited oils have been developed which contain small amounts of chemicals which increase the protection against both oxygen and moisture in the air and liquids containing corrosive chemicals such as the byproducts of combustion from an engine. Special oils are available which

Storage and in Use



Dipping large traction motor bearings in hot rust preventive compound.



A mechancial assembly received in the Far East rusted beyond use due to lack of rust protector when packaged for shipment.

prevent rusting in turbines and hydraulic systems. Greases are now manufactured which will protect against corrosion that otherwise would occur with ordinary greases when equipment is allowed to remain idle. Rust preventive compounds should always be used if equipment is to remain in storage a long time. They can be removed by washing with petroleum solvents such as kerosene when the equipment is placed in service.

A number of types of oils are manufactured, having rust preventive characteristics designed for specific purposes, e.g., for rust prevention of parts during manufacture and in packaged storage, for use in internal combustion engines just prior to shipping or placing in storage, or for lubrication in the presence of air and moisture as in turbine and hydraulic systems.

Petroleum base compounds of the viscous type give more sustained protection than oils against rusting of idle machinery. They have suffi-

cient body so that thick films can be maintained and still can be removed with a solvent when necessary. They are not suitable for use as lubricants, but do not dry out hard.

Many grades and types of greases are now manufactured having rust preventive properties not possessed by ordinary grease. Selection of a grease having the best rust inhibiting characteristics for a given purpose should be based primarily upon the lubrication requirements.

Protecting Engine Parts

Working surfaces such as cylinders of internal combustion engines may become sufficiently rusty to be non-operable if not properly protected during idle periods. A good grade of preservative oil should always be used in such equipment when it is known that it is not going to be placed in service in the immediate future. Good practice is as follows:

1. Drain used oil from crankcase while engine is still hot after running

and flush with a light flushing oil. Install clean oil filter cartridge. Refill crankcase with preservative oil, run engine at fast idle for 15 to 20 minutes, and shut down. The use of 3% of preservative oil mixed with the fuel for diesel engines during this run will assist in preventing corrosion of the injectors.

2. Spray preservative oil into each cylinder through spark plug hole while engine is turned over slowly by hand. Dip electrodes and threads of spark plugs in preservative oil and replace.

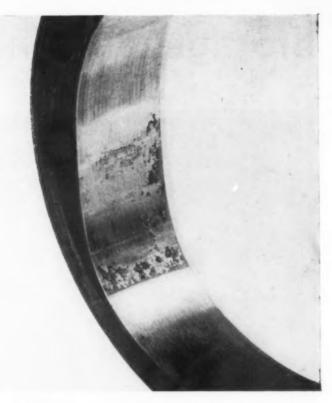
3. Remove distributor cap and coat each lobe of breaker cam with a film of rust preventive compound. Replace cap and seal breather hole in cap with waterproof tape.

4. On valve-in-head engines, remove valve cover and spray preservative oil over rocker arm mechanism, interior of valve cover, and between cylinder block and side plate over push rods. Replace cover.

5. On gasoline engines, drain fuel system, including carburetor, fuel



Badly rusted float control valve spool from a hydraulic system, due to water in oil that did not contain a rust inhibitor.



Ring from a rotary-vane pump, rusted because the hydraulic oil was not suitably fortified to act as a rust preventive in the presence of moisture.

pump strainer, lines, and tank. Close all openings and re-connect all fittings. Apply rust preventive compound to all linkage, pins, choke and throttle rods.

6. Be careful not to get oil or grease on rubber connections or parts, as serious deterioration may result.

7. When placing engines in service after storage, all rust preventive compound should be removed with kerosene. Then the crankcase should be drained, flushed, and filled with the proper lubricating oil for operating.

Oils intended primarily for preservation of engines in storage should only be used as lubricating oils for short periods of operation, since they are usually not designed for continuous duty as lubricants. Some heavy duty motor oils have quite good rust protective properties and should be used in engines subject to intermittent idle periods, such as in life boats, standby engines in plants, etc.

Ball and Roller Bearings

Probably no class of machined steel units is more vital to all types of modern equipment than the ball or roller bearing. They are used in innumerable machines and are frequently idle for the periods between manufacture and installation and use. Spare bearings are usually stocked for replacement purposes and are therefore subject to variable periods of storage up to several years before being used. They therefore require particular attention and care in order to protect them from corrosion.

Ball and roller bearings which are lubricated at the factory and provided with seals are intended to be installed ready to operate, and should not require re-lubrication during use.

Bearings that are not pre-lubricated should be thoroughly protected with a rust preventive oil or light non-hardening compound. It appears preferable to select this material of such consistency that free turning of the bearing is permitted. Although it might be considered desirable to remove the rust preventive material before placing bearings in service and thereby prevent contamination of the lubricant with the rust preventive, it is preferable not to do this due to the possibility of permitting dirt to enter the bearing during this procedure. Most bearing manufacturers therefore recommend to install the bearing directly from the package and lubricate. Rust preventives used for bearings should be selected so that they either are readily displaced by the lubricant when placed in service or do not detract from the proper functioning of the lubricant when allowed to remain in the bearing and become mixed with the lubricant.

Turbines

Continuous satisfactory operation of a well designed turbine unit depends very largely on proper functioning of the lubricating system. The most important single requirement for satisfactory lubrication is that the entire system be clean and free from rust and dirt.

All piping should be thoroughly cleaned before shipment, by immersion in a hot alkaline solution. It should then be washed and pickled in hot dilute acid to which an inhibitor has been added to prevent attack on the metal, then washed with clean water, dried and immediately coated with a rust preventive compound which can readily be removed with a light petroleum flushing oil after installation.

Cast and fabricated parts such as bearing pedestals and caps, bearing brackets, valve gear parts, etc., should be cleaned free from rust and scale and coated with rust preventive prior to shipment. Oil tanks and gear casings should be similarly treated.

After assembly of the entire turbine system, it should be cleaned by circulating hot flushing oil through the lubricating system and a filter. During the initial flushing operation, the bearings and governor parts should be by-passed to avoid entrance of dirt or rust into these vital parts of the system. When examination of the system and the filter indicates that the tanks and lines are clean, the by-passes should be removed and the entire system flushed until inspection indicates perfect cleanliness.

After a turbine system has been properly prepared for service, it should be filled with a rust and oxidation inhibited turbine grade of oil. This will prevent the metal surfaces from rusting in service, even in the presence of water, by means of a protective film which the inhibitor maintains on the surfaces.

Cleaning

Protecting finished articles with a rust preventive material and a well designed package may be a waste of effort if good cleaning procedures are not used first. There are a number of methods for cleaning finished steel surfaces which are capable of producing satisfactory results, but each case should be considered carefully before selecting the cleaning procedure.

Most surfaces are contaminated with one or more of the following: oil, grease, dust, perspiration, cutting oil, water, salts, metallic particles and residual compounds from machining, lapping, grinding, or buffing.

Petroleum solvents are generally most suitable for removal of oil and grease. The most suitable grade is Stoddard solvent or dry cleaner's naphtha. Gasoline containing tetraethyl lead should never be used. In case perspiration is to be removed, a second solvent cleaning with methyl alcohol will be effective. Both solvents can be used by dipping, brushing, or spraying.

Various solvents can be used for cleaning by exposing the parts to Equipment for this their vapors. procedure consists of a closed vessel containing the solvent, heating coils in the bottom, a space above this for suspending the parts to be cleaned in the vapor, and condensing equipment to reliquify the solvent. Because of the fire hazard involved in this procedure, non-inflammable solvents containing chlorine are frequently used. Care should be taken that corrosion does not occur, due to the action of these solvents when

contaminated with water. Carbon tetrachloride is particularly unsuitable due to this possibility. In all cases where a chlorinated solvent is used, it should be checked frequently for presence of free acid. If acid is found, it should either be neutralized before proceeding or the solvent discarded.

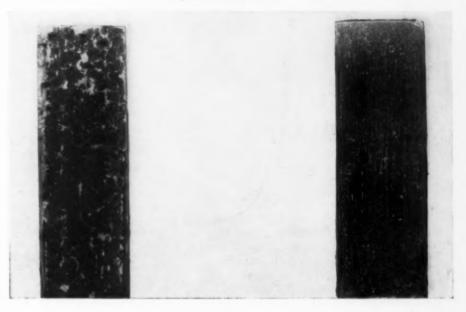
Dilute alkaline solutions in water are effective for removing all kinds of contamination from steel surfaces. Many such cleaners are on the market. They should not be used on aluminum, zinc, or magnesium, which are attacked by alkali. Neither

should they be used on highly finished steel surfaces, since a thin film of salt may be left. Alkaline cleaning should preferably be followed by rinsing in hot clear water.

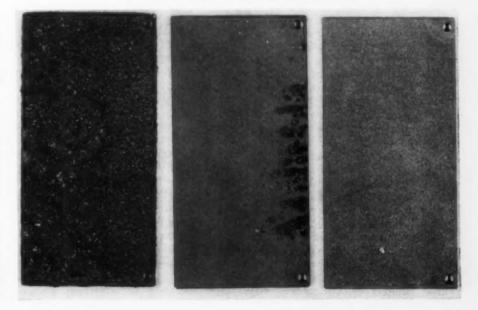
Drying

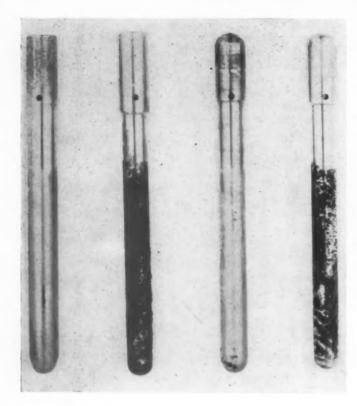
Regardless of what cleaning procedure is used, all parts should be thoroughly dried either by clean dry compressed air, in an oven, or by careful wiping with clean, dry, lintless cloths. They should be kept at temperatures above the dew point of the atmosphere until protected with a rust preventive. They should not

Test panels after 100 hours exposure in salt spray cabinet. The panel at left was protected with partially inhibited SAE 10 oil; that at right, by rust inhibited oil.



Humidity cabinet test panels after 150 hours at 120 degrees F and 100% humidity. Left to right: ordinary airplane oil; partially inhibited airplane oil; aircraft engine preservative oil.





Test rods after
ASTM turbine oil
rusting test. Left
to right: Rust inhibited oil run
with distilled water; uninhibited
oil run with distilled water; inhibited oil run
with salt water;
uninhibited oil
r un with salt
water.

be touched by the hands after cleaning, but should be handled with tongs or cotton gloves, since rusting is liable to occur even after coating with a rust preventive material at spots where finger prints of perspiration are left.

Application of Preventive

All rust preventive materials can be applied by spraying, brushing, or dipping, although it may be necessary to either heat or cut back the heavy compounds with a solvent. Heating a product containing a petroleum solvent increases the fire hazard, and should be avoided. It is not necessary, since the consistency can be reduced more readily, if desired, by using more solvent. When spraying is used, care should be exercised that only clean dry air is supplied to the spray nozzle.

Selection of the preservative should be based on the degree of protection required and whether or not it is to be removed at the time when the equipment is placed in service. It is generally true that the thicker the film, the better the protection. Articles that are going to be carefully packaged and stored indoors for a limited time in temperate climates can be adequately protected with a comparatively fluid oil. On the other hand, equipment that is to be exported, or remain out of use for a long time in severe climates should be well coated with a heavy rust preventive product even though it may

be slightly more troublesome for someone to remove the coating when put in service. Hot dipping in a heavy compound will eliminate all traces of moisture from surfaces and result in long time protection. The thickness of application can be controlled by varying the temperature and time of dipping.

After coating parts with rust preventive materials, they should be further protected from air, dirt, and moisture by some sort of package if the best service is to be realized from the coating. The quality of this package should depend on the storage conditions anticipated.

Packaging

Small parts should be wrapped in greaseproof paper which will not absorb the preventive coating and thereby destroy its effectiveness at points of contact. Wrapping material should also be waterproofed if this feature is needed. Articles having large air volume, such as large bearings, are preferably wrapped so as not to include this air in the package. Large equipment that is coated and wrapped should be protected from the crate so that the coating will not be abraded away during handling. The use of wood containing moisture or rosin should be avoided.

In cases such as aircraft engines, etc., where the ultimate in protection is desired, a complete vapor-proof package may be justified, accompanied by a dehydrating agent inside the package.

In order to select rust preventive materials intelligently, it is necessary to be able to predict to some degreee their probable performance from tests in the laboratory. In addition to the usual tests such as viscosity, flash point, volatility and consistency, a number of accelerated performance tests have been developed. They are none too accurate, and the correlation of results with actual serviceability is difficult. They are, however, definitely of value for classifying products into groups of poor, better, and good rust preventives when used under severe storage conditions.

Testing Materials

Immersion of coated parts in plain or salt water is the simplest test, and readily indicates the difference between good and poor rust preventive materials by comparing the rust that develops. Significance of the test is not very pronounced unless the protected articles are actually to be submerged in service. It is no longer used to any great extent in specifications.

ASTM standardization test D665-47T is in common use for turbine and hydraulic oils, to determine their ability to protect against rusting in the presence of water. It is of doubtful significance in evaluating an oil intended merely as a rust preventive coating for parts in storage which do not encounter this condition.

The salt spray test, with a number of variations, is an old method that has been used with considerable success for evaluating not only petroleum type rust preventive oils and compounds, but also paints and metallic coatings. The results are measured in hours or days that exposure to the spray is withstood without appearance of rust on the specimen.

The humidity cabinet test has come into popular use during the recent war and is frequently encountered in government specifications. The test is valuable because it differentiates between poor and good materials under conditions which are frequently encountered in the field. A poor product will fail in this test in a relatively few hours; a good product may run from 150 to 800 hours. A modification of this test involves exposing the panel to a carbon arc lamp to simulate sunshine before placing it in the cabinet, or alternately placing the specimen in the cabinet and removing it for periods of drying. The most significant procedure has probably not yet been evolved or proved.

Better Industrial Selling

By Paul V. Farrell

Purchasing agents evaluate the quality of postwar salesmanship and offer practical suggestions for more effective selling

WHEN the National Federation of Sales Executives met recently in New York City, they indulged in a session of soul-searching self-analysis that led them to conclude that the shortage of competent salesmen in the growing buyer's market of today is critical, and that something must be done about it soon to prevent ill effects on the national economy.

A look at the situation from the other side of the desk reveals that salesmen with a yen to "see ourselves as others see us" have a body of articulate and constructive critics in the country's purchasing agents. In reply to a Purchasing Opinion poll on the quality of today's salesmanship and specific recommendations for improving it, we received hundreds of suggestions and comments, which could be summarized only in outline in the report of that survey published in the August issue. The wide interest which that report has aroused, and the many requests for more detailed and comprehensive treatment, prompts this presentation, which embodies a good deal more interesting and instructive material than was possible to include in the statistical analysis and in the limited space available in the original report. This is particularly true in respect to the enlightening "comments" appended to many of the replies. The source of the information and opinion presented herewith is the same authoritative list of seasoned purchasing executives, in daily contact with industrial selling, who replied to the original questionnaire.

On a percentage basis, the purchasing agents were almost equally divided three ways as to the qualifications of today's salesmen—32% holding that they are better qualified to give helpful information on their products, new procedures and applications, etc., than before the war, 34% that they are less qualified, and 34% that there is little difference between prewar and postwar salesmanship. However, even those who see

no decline in the quality of salesmen apparently did not hesitate in tagging a little bit of advice for improvement on that part of the questionnaire reserved for comment.

Foremost among the purchasing agents' recommendations to the salesmen was to know their product better, be able to explain its technical aspects, and to be well-informed on its applications. A P.A. for a large watch company summed up several points when he said, "Salesmen should get more training-in some instances this may mean 6 months to a year or more inside. Too many are college graduates and/or ex-G.I.'s who have only been 'briefed' regarding their product. In many instances I know of, the P.A. from years' experience knows more about the product, its application and demonstration than does the salesman. I always try to help a new man along, but not everyone does, and in today's competitive market an untrained salesman has two strikes on him before he gets an interview."

From a midwestern oil products company came an embracing indictment that reflects other individual comments: "Most present day salesmen are too long winded and know too little about their products and are rather indefinite about the price of their product and about delivery dates. I prefer a salesman who is brief, stating concisely the purpose of his call, a description of his product, its advantages over similar products on the market and, most important of all, a firm, definite quotation and delivery date. Nine out of ten still quote with a lot of ands, ifs and buts."

"Bluffing" to cover up a lack of knowledge, or a general attitude of helplessness while waiting for further engineering information from the home office appears to irritate a considerable number of buyers. "Salesmen should know their line, and be able to locate specific information in their catalogs quickly without having to thumb page after page as is sometimes the case," was one recommendation.

Another P.A. asks that they "be more fully informed about their product so that they can weigh possible applications intelligently, thereby avoiding the need for high-pressure idle conversation and checking back with the home office."

A straightforward bit of advice from a buyer is: "Really do a selling job. Get the information a buyer needs and asks for. If a buyer is in a hurry for some information, don't talk about writing a letter to get it but talk about wiring or phoning for it. Learn to really serve the customer the way he wants to be served."

The "service" theme is emphasized many times over in the replies. Purchasing agents seem to resent the salesman whose interest in customers ceases abruptly once the sale is made, and numerous barbs are directed at mere "order takers". They want to see "greater interest in customers' requirements to a point where the salesman makes specific recommendations to solve particular problems ... better service by following orders more closely . . . better preparation to show how their product would benefit our company . . . more thought to the reduction of costs by improving manufacturing methods."

Another "service" failure commonly complained of in the replies is the inability or disinclination of salesmen to keep buyers informed on price trends and delivery dates, and labor, economic and supply conditions in the supplier's industry that would affect them. Four requirements laid down by one buyer are:

1. Closer liaison with purchaser regarding delivery date.

2. Recommendations to improve and/or reduce costs of purchasers'

3. Advance information so far as possible as to contemplated changes in price structures and availability.

4. Suggestions where purchaser's

product may be merchandised.

A reorientation of sales programs and choice of personnel by top level sales executives is urged by a number of purchasing agents, three of whose comments are given here in their entirety as typical of the sentiment ex-

pressed:

"A careful review of sales programs and personnel with refresher courses and schools carefully supervised is necessary. My observation has been that about 2% of the men calling today are real salesmen. The critical shortages over the past six years and the unprecedented demand have made salesmanship unnecessary. The result has been a depreciation in salesmen-they have forgotten how to sell. They have in many cases even forgotten how to sell the company they represent and work for, often belittling the efforts and accomplishments of their own organization. A spirit of indifference and helplessness instead of aggressive action has developed.

"I recommend a course of instruction by sales managers or others who have had to fight for business in past years, to be given to the war time and post war salesmen. These boys have never had to 'sell'. They need guidance. They all want to learn. The purchasing agent and his buyers (if they are both pre-war themselves) can do a lot for such salesmen. There is likewise some education to be done

on the postwar buyer.

"Give the younger salesman a fair opportunity. Be certain he has arrived and can meet the usual day by day problems common between sales and purchasing. Speaking of the younger set (the older boys know all the essential requirements), select men who have a genuine interest in this work, avoid the lackadaisical type which seems to be prevalent today. Salesmanship is a profession. Not every individual regardless of personality can qualify, in spite of some executives' preconceived ideas."

Comment on the personal characteristics and traits of salesmen, most of which was printed in the statistical survey, ranged from criticism of "mumbling" and failure to speak clearly to the need for "clean appearance, respectful approach, and sincere presentation of sales information." An interesting observation in this regard comes from the purchasing agent of a mid-west fibre products concern: "Without wishing to appear immodest, I believe salesmen reflect, to some degree, the character and quality of the party upon whom they call, and good or indifferent service can thereby result. To

me it appears the quality and type of representatives has definitely improved." Several strong complaints are voiced against salesmen knocking

competitors' products.

Today's salesmen, however, are not without their champions among the purchasing agents. Several P.A.'s praised their qualifications, manners and approach, and such remarks as "All salesmen calling seem to know their business" and "The men that call here are of a high type and we could not improve on them" are not unusual in the answers. Of all the respondents, salesmen will probably think most highly of the one who

wrote: "Give them better pay. The best salesmen who call on me are well paid—either reasonable salary and expenses, or substantial drawing account and suitable territory to enable him to earn his draw without sacrificing service."

Throughout the answers in the survey, despite occasional sharp-tongued statement, there appears to be a sympathetic understanding of the difficulties faced in establishing sound and permanent selling-buying relationships under today's conditions and an earnest desire to cooperate with and help salesmen who are working toward the same goal.

How the New Steel Pricing Method Affects the Northwest

By Howard Rafferty

THE recent change-over to f.o.b. mill pricing of steel leaves Northwest industrial users with mixed feelings as to its effect on industry. Watt Fallis, Purchasing Agent of the Kenworth Motor Truck Corporation of Seattle, manufacturers of heavy duty jobs for all types of hauling, sums the case up as follows:

"A preliminary survey of the situation indicates that Seattle buyers will pay a penalty of from 14% to 16% on carload rail shipments from eastern sources. From a competitive standpoint, approximately 10% of this will also be paid by eastern competitors because of the base price increase. The remaining 4% to 6% represents the freight which must now be absorbed by the purchaser.

"From these conclusions, it is apparent that prices of steel products must necessarily be raised proportionately. On the other hand, most buyers to my knowledge have been forced to purchase substantial quantities of steel from warehouse stocks and the new basing point will unquestionably release larger quotas of steel for West Coast purchasers from

eastern mills, since no penalty is involved to the mill. It would seem, therefore, that the actual contrast between ability to purchase carload rail shipments under the new arrangement should actually reduce the cost under the previous conditions of occasional rail shipments and substantial warehouse purchases.

"Many West Coast buyers have converted production to aluminum because of availability on the West Coast, and the new carload rail price f.o.b. manufacturer's plant will be a saving under the best competitive

aluminum prices.

"For the reason stated above, it would seem that the average large manufacturer could actually save money under the new arrangement, assuming of course that rail shipments will be available as indicated."

Of particular interest in the foregoing statement is the reference to the substitution of aluminum for steel by many industrial users on the west coast. It would appear that the recent change to f.o.b. mill pricing of steel will tend to check this conversion trend to some extent.

FLAME CUTTING

A Modern Method of Shaping Steel

Accurate, speedy, versatile, and economical, flame cutting is truly a production process adapted to large or small pieces in large or small lots from soft or alloy steel plates

By K. C. Kornman Joseph T. Ryerson & Son, Inc. Chicago

FLAME cutting as a means of shaping steel for subsequent fabrication into parts—and in some cases practically the whole—of machinery and equipment, has so advanced in adaptability that as a separate and distinct method it rivals the mechanical processes of forging, casting and, to a somewhat lesser extent, stamping, that are used in mass production.

The rapid growth of flame cutting as an industrial tool is due largely to the development of mechanized cutting equipment that is fast, accurate and extremely versatile. When flame cutting or flame shaping of steel is employed there is, of course, no investment in expensive presses, dies, patterns, etc. In fact, no investment of any kind need be made to take advantage of or to utilize the flame cutting process. Flame cutting service is now available from many sources of which perhaps the steel service plants or steel warehouses are best known. They provide this form of cutting along with the other nore commonly known methods of sawing and shearing. Unless flame cutting is employed quite extensively in production work, there are some very good reasons why it is generally more practical and economical to have flame cut shapes produced outside your own shop.



Figure 1. Unretouched photo of a group of flame-cut shapes, showing characteristically smooth edges.

The most important reason is the cost of make-ready. This involves the movement and placement of material for cutting, and the removal of cut material to the next operation or to a place of storage until it is needed. Time studies have shown that the portion of the cycle devoted solely to cutting is but a small fraction of the complete floor-to-floor time. Thus, while the cutting operation alone may indicate that worthwhile economies are being effected, the total cost may be out of line when handling and other costs are included.

Because of the nature of the flame cutting equipment it cannot always be installed at the most logical spot in a production layout. Usually a place apart is required where the open flame, heat, etc., do not present a fire hazard and do not interfere with other operations. Until such

time as the volume of work requires it and an efficient layout can be arranged, the average metal working plant or machine shop will be better off to draw on outside sources for flame cut shapes. The routine involved in this type of cutting has been reduced to the simplest form by the steel warehouses. They can be depended upon to produce flame cut steel shapes promptly and at low cost.

Flame Cutting vs. Forging or Casting

It is possible, of course, to chart the costs of flame cutting compared to forging or casting, but because of the many variables involved from one metal working plant to another, no attempt will be made here to set up case studies for the purpose of demonstrating its greater economy or efficiency. Instead, some of the things accomplished by flame cutting and

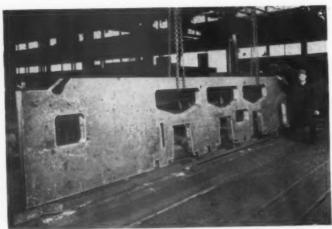




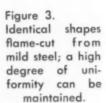
Figure 2. Locomotive side frame, flame-cut from heavy plate.

The accuracy limit is usually 1/16 inch, plus or minus, on stock up to about 2 inches thick, although closer tolerances can be maintained in special cases. Straight lines, circles, arcs, or any combination of these may be cut with equal ease. The cut edges are quite smooth for this type of work as will be noted in the un-retouched photo, Figure 1. For many applications no machining, grinding or other finishing operation is required. If flame cut parts are to be machined or otherwise finished, they are produced slightly oversize to allow for removal of metal.

Versatility of Flame Cutting

As a versatile tool for shaping steel the flame cutting machine is in a class by itself. If only one piece of an irregular shape is required, this can be produced manually by following a full size outline of the shape to be cut. For production of a number of identical shapes, a spindle tracing device is employed. It follows a track templet or cam which has been shaped to the design to be produced. For straight line and circular cutting the machine may be guided from standard straight tracks and pivot arms. There are variations in the manner of guiding the cutting torch but all accomplish the same result, namely, the accurate reproduction in steel of shapes sketched or blueprinted on

Production can be speeded by using a tandem or multiple torch set-up, several cuts being made at the same time, following the one templet.



how they are accomplished will be pointed out, which may form the basis for further study and consideration of this method of shaping steel.

Flame cutting is most widely employed on open-hearth low carbon steel plates, mainly because this class of steel is in greatest use. However, high carbon, alloy quality and stainless plates may also be flame cut. The cutting of stainless plates calls for a special technique which will be mentioned later in this article.

There is no limit on thickness. Plates up to the heaviest rolled may be successfully flame cut. The cutting speed on soft or mild steel varies, ranging from about 20 inches per minute for ½-inch plate down to about 7 inches per minute for 4-inch plate. As the thickness increases, the rate of speed is naturally reduced.

Figure 4. Multiple cutting; production is speeded by using more than one torch in following the pattern.



The versatility of flame cutting is further illustrated by the great variety of shapes that can be produced. On the one hand are exceptionally large shapes such as locomotive frames, which range up to 25 feet shaped with curves, straight lines, incuts and holes, from plates 3 and 4 inches thick. Other large shapes are frames for printing presses, frames for heavy stamping presses, and component members of a wide variety of machinery, equipment, etc.

Smaller shapes include items far too numerous to mention in their entirety. The following may be taken as representative; circles, rings, gear blanks, die parts, cams, wrenches, moulds, sprockets, fixtures, flanges, propellers, brackets, clamps, bolsters

and washers.

Figure 2 shows a locomotive side frame cut from heavy plate. An idea of its size may be gained by comparing it with the workman standing alongside. Figure 3 shows a number of identical small shapes, as alike as the proverbial "peas in a pod". Figure 4 illustrates a multiple cutting job, sprocket blanks being produced from 3% inch plate. This was an unusually close tolerance, precision cutting job.

Flame cutting and welding form a team that is hard to beat in the fabrication of many types of fixtures and equipment, notably heavy units such as road building machinery, cranes, presses and ship parts. Component parts are shaped from strong rolled steel by flame cutting, at much lower costs than they could be produced by

any other method. The parts are then assembled and welded together to form a portion of or the whole of the complete unit. Figure 5 illustrates an assembly consisting of welded flame cut and standard structural shapes.

Flame Cutting Stainless Steel

For some time, the cutting and shaping of stainless steel plates by the usual mechanical methods has posed a problem from a cost standpoint. Sawing, shearing, machining, etc., can be accomplished but costs as a rule run higher than the cost of similar operations performed on mild steel. Flame cutting of stainless steel was tried long ago, but all of the early attempts resulted in failure due to the formation of chromium oxides of such high melting point that they prevented further oxidation and severance of the metal. A certain measure of success was achieved by using different techniques but in all of them the cut was of poor quality.

Within the recent past a fluxing process has been developed which makes possible the flame cutting of stainless by oxidation, the same as mild steel, resulting in relatively clean, smooth cuts. Because the fluxinjection process is new it is expected there will be some further refinements in technique. However, it would appear from the results secured thus far that flame shaping of parts from stainless steel plates will ultimately develop into a routine function. Although but little publicity has been given to the subject

during the experimental stages, it is now possible to secure flame cut shapes from stainless for many applications. It is important that full details concerning the application be given when making inquiry, especially information concerning the degree of corrosion resistance required.

Weigh Advantages of the Product, Not the Process

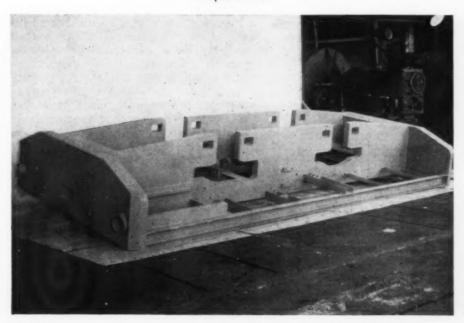
Flame shaping of steel has been mentioned as one of the more important alternate methods of fabricating parts. The word "alternate" may bring to mind "substitute" and this in turn might conceivably lead one to believe that flame cutting is to be considered only as a temporary means of securing shaped parts in emergencies or when other methods fall down for one reason or another.

Nothing, of course, could be farther from the truth. The chief consideration should be the characteristics of the piece produced, of course, along with the cost and speed of procurement. How the shaping is done is relatively unimportant as long as the requirements are met in a manner equally or more satisfactory than previously employed methods.

For example, assume that the desired shape can be produced either by casting or flame cutting. Leaving out the cost factor, it may be found that rolled steel offers certain definite advantages in the form of greater strength and toughness that enhance the life and value of the completed product. Experience has shown that parts shaped by flame cutting and joined by welding offer not merely an alternate method but in many cases a more desirable method of fabrication.

Because purchasing executives are expected to keep closely informed on sources for the procurement of a wide variety of supplies they are frequently in a position to initiate movements tending toward betterment of existing fabricating and production practices. Though mechanized flame cutting is by no means a new method of shaping steel, it has advanced greatly in adaptability in recent years and hence it is possible that the full scope of its possibilities may not be too well known in some quarters. This article, therefore, is intended to serve not as a technical treatise of the subject, but instead has as its aim the setting up of information that will lead to further consideration and investigation of flame cut shapes for production work as well as for occasional short-run and maintenance requirements.

Figure 5. Flame-cut and standard structural shapes welded to form a complete unit.



Purchasing Procedure of the

REQUEST FOR INFORMATION

DATE

Please get information, price and delivery promise on the following material, machinery, etc.,

By W. B. Parker

Purchasing Department James Mfg. Co. Fort Atkinson, Wis.

WHEN MUST HAVE

Suggested sources

Why is this information needed?

What saving is involved in contemplated change or addition?

How is problem handled now?

Signed

When someone in the shop wants information about materials or equipment, without an actual or immediate commitment to purchase, a "Request for Information" is sent to the Purchasing Department, outlining reasons for the request, as indicated on the form.

If material is to be purchased, the need is reported to the Plant Superintendent and a Purchase Requisition is issued from the Superintendent's office. This form is made out in triplicate, two copies going to the Purchasing Department and the third being retained by the sender. All requisitions require the signed approval of an authorized person. With this authorization, the Purchasing Department proceeds to locate a source and issue the order.

STABLE OF THE PARTY OF THE PART

The Purchasing Department maintains Stock Record cards and a Vendor Record covering all items regularly purchased. These are kept on a Kardex visible file for ready reference, showing receipts, quantity on hand and due on order, and balances that are not assigned to a specific order; also vendor source and price on each purchase order issued.

James Manufacturing Company

The Purchase Order form has all essential information and instructions clearly shown on its face; there is no "fine print" or lengthy list of conditions on the reverse side. A composite clause printed in bold type covers the matters of quality, patent protection, acceptance of delivery stipulations, and certification of compliance with federal and state laws.

Six copies are made. The original is sent to the vendor. The other copies, identified by color, are for Purchasing Department use and for distribution to Accounts Payable, Accounting, and Receiving Departments. Prices are blocked out on the Receiving Department copy.

IMPORTANT THIS FORM MUST BE SIGNED AND RETURNED IMMEDIATELY

James Mfg. Company 104 Milwaukse Avenue W. Fort Atkinson, Wisconsin

Attention Purchasing Dept.

This will acknowledge receipt of your Purchase Order ..., of (date) ..., which has been assigned our order

This order has been entered and will be shipped in accordance with your shipping schedule, as outlined.

Yours truly.

Definite Shipping date:

Via:

REMARKS:

James Mfg. Co. PURCHASE ORDER

FORT ATKINSON, WIS.

THIS NUMBER MUST APPEAR ON INVOICE CORRESPONDENCE PACKAGES STC INVOICE WITHOUT NUMBER WILL BE RETURNED FOR CORRECTION

Nº 6982

GENTLEMEN-KINDLY FURNISH US THE FOLLOWING MATERIAL AT PRICES AND CONDITIONS NAMED HEREIN

	-	
CURTS CHRESTOSIS	Union otherwise expressiv stated all material farmished on this order must be of first anality.	
000000000000000000000000000000000000000	Union otherwise expressly stand all material framinism on this order want be of first quality. This order except materials islend above to placed with the understanding the applies there of assume full responsibility for all pattern labring-want resulting from its application or assume that responsibility for all pattern labring-want resulting from its application or assume that the castry, assemble to the constraint of the control pattern labring-want competitor better that the castry, assemble as management of all of the conflictant, written or printed, and the conflictant want to be a supplied to the conflictant with the conflictant was a supplied to the conflictant with the conflictant was a supplied to the conflictant with the conflictant was a supplied to the conflictant with the conflictant was a supplied to the conflictant with the conflictant was a supplied to the conflictant with the conflictant was a supplied to the conflictant was a supplied to the conflictant with the conflictant was a supplied to the conflictant was a supplied to the conflictant with the conflictant was a supplied to the conflicta	

SHIP VIA ...

SHIP NOT LATER THAN F. O. B. CARS FREIGHT ALI

TERMS WE RECEIVE WRITTEN INSTRUCTION TO THE CONTRARY WE WILL ASSUME CASH DISCOUNT TERMS TO APPLY TO PAYMENT ON 25TH PROX. FOR BILLS RECEIVED PRIOR TO 15TH OF THE MONTH AND 10TH PROX. FOR BILLS RECEIVED BETWEEN 15TH AND THE END OF MONTH.

Pienes extenentelles, griing probable obioping date, Render involce in displicate, pricing only original; immediately upon slipment. Note hipping directions and send bolt of fading showing wright and rate of feright with each innoice. No oblewance for boating, packing or cartage. We deduct freight on account of materials and account of materials.

JAMES MFG. CO.

\$176 + 28 47 AV 1875

Purchasing Agent

Somewhat unusual, and originated in this Department about a year ago, is the use of a separate Acknowledgment form, which is sent to the vendor in blank, attached to the Purchase Order, to be filled in, signed, and returned by the vendor. The method has proved highly successful, and the forms are returned on more than 90% of the orders issued. Suppliers find it a convenient way of acknowledging orders and in the Purchasing Department it has eliminated a great deal of clerical work in routine follow-up to make sure that orders have been received and accepted and that shipping schedules will conform to the company's requirements.

The Receiving Report is a comprehensive form, with spaces for 20 items to report mixed carload shipments and providing for an itemized count of all sorts of shipping containers, along with a statement of the condition of the shipment as received and transportation costs involved. Inspection and rejections are also noted on this form.

Description of Goods Rejected

O. K. to Alter and Use as Specified by

Description of Goods Rejected

Reason for Rejection

Reason for Rejection

Specification Called for

Specifications Called for

Rejection Report

Inspected by

Sheets

Sheet No. Date

Received By

MATERIAL RECEIVED NEW PUR. ORDER HO. James Mfg. Co. RET. REP. NO. ______ RETURNED ELMIRA, N. Y. FORT ATKINSON, WIS. Seal Number Both Sides Car Number and Inital____ Shipping Point ____ ____ Date of Pro. ____ Local Freight Shipment __ R. R. Pro. _ Condition of Car ___ Condition of Material ____ Reported to Traffic Dept Yes __ No Delective Rejected Accounted Shipment Bales Bundles Receiving Department-Plant No._ Barrela Order No. Haif Barrels Bal. Due Pes. Rejected Amt. Ordered Pcs. Received Coile Pcs. Rejected Amt. Ordered Pcs. Received Bal. Due Peckages Pieces Can the Above Be used if Altered ? Freight Collect Freight Prepaid Bunness Collect Date nal Post Meterial No.

After incoming shipments are unloaded they are routed through the Inspection Department, which is directly under the control of the General Manager. If any part of a shipment is found to be defective, or not up to specification, a detailed Rejection Report is made out, showing the quantity, source, and description of the goods rejected, the reasons for their rejection, and the possibility of utilization in case the necessary alterations or corrections can be made. At the same time, a green tag is attached to the rejected goods to identify them pending disposition and prevent them from getting into production or stores until the proper correction is made. This tag can be removed only by the Inspector. If goods are acceptable, they are passed and no report is necessary.

	REJECTED
•	AmountSymbolPart No
	DateInspector DO NOT REMOVE THIS TAG GEORGE LOHMAIER Inspector will do so when correction has been made. Chief Inspector

Deduct ____ Percent _

Inspected By

Counted and Listed on Casting Inspected by Report Number	PATTERN NO.	QUAN. ACCEPTED	NO. of CONTAINERS	
			Listed on Cast Report Number	ing
Special Notes	Special Notes			

Castings are an exception to the general rule. These are handled on the basis of 100% inspection, and every lot is tagged with a Casting Inspection Ticket showing the actual count of accepted pieces. Any rejections are segregated and marked for other disposition.

___ For Handling___

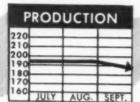
___ Date___ Handled By:____

For Freight

__ Date.

Other special forms are provided to cover special circumstances. Many of our ideas for forms and procedure are based on the methods reported in Purchasing Magazine.

Where We Stand



Today's Business Trends As Reported In Current Statistics

Industrial Production Index
Steel Production (Weekly)
Electric Power Production
Bituminous Coal Production
Auto, Truck & Bus Output
Petroleum Output
Engineering Construction

BASE	LATEST	MONTH AGO	YEAR AGO	% OF CH	ANGE IN YEAR
1935-39=100	187 (p	relim.) 191	176	— 2.1	+ 6.2
000 net tons	1,703	1,711	1,475	- 0.4	+15.5
mil KWH	5,470	5,319	4,721	+ 2.7	+15.9
000 net tons	12,236	12,150	12,015	+ 0.7	+ 1.8
units	95,353	108,948	79,279	-12.4	+20.3
000 bbls	5,531	5,505	5,173	+ 0.4	+ 6.9
000 \$	116,508	151,361	128,830	-23.0	- 9.6

	PR	ICES	
200 190 180 170			
160 150 140			

TOLT AUG. SEFT.						
All Commodities (Bur. Labor Sta	tistics) 1926=100	168.0	168.3	157.4	- 0.1	+ 6.7
Semi-Manufactured Articles	1926=100	158.6	152.9	150.4	+ 3.7	+ 5.4
Raw Materials	1926=100	180.9	183.4	171.9	- 1.3	+ 5.2
Manufactured Products	1926=100	163.9	164.1	152.5	- 0.1	+ 8.0
Steel Billets, Pittsburgh	gross ton	\$58.24	\$58.24	\$45.00	-	+29.4
Steel Scrap, hvy, Pitts., del.	ton	48.00	48.00	44.50	_	+ 7.8
Copper (Electrolytic)	lb.	.23 1/2	.23 1/2	.21 1/2		+ 9.0
Cotton, mid., 15/16"	lb.	.3240	.3548	.3256	- 8.7	- 0.5
Rubber, (Rib-smoked sheets)	lb.	.23 1/8	.24 1/2	.16 3/8	- 5.6	+41.0
Wheat (No. 2)	bu.	2.48 1/4	2.40 %	2.84	+ 3.1	12.7

	TR Dept S	ADE	les)
500 450 400 350 300			
250	JULY	AUG.	SEPT.

Dept. Store Sales Index (Fed. Res)	1935-39=100	308	258	265	+19.3	+16.2
Commercial Failures (Dun & Bradstreet	no.	94	116	66	-19.0	+42.4
Freight Carloadings	cars	895,279	878,901	809,050	+ 1.8	+10.6

FINANCE

Stock Prices (Standard & Poor's)	1926=100	125.6	124.8	118.3	+ 0.6	+ 6.2
Bank Clearings (New York) —	mil \$		6.504		_	_
Federal Reserve Credit	mil \$	21,834	22,064	22,472	- 1.0	— 2.8
Currency In Circulation	mil·\$	28,287	27,966	28,742	+ 1.1	- 1.5

Materials & Markets

FUELS

Further evidence of a distinctly favorable outlook in the oil supply situation was the recent announcement by the Commerce Department that it had begun licensing shipment of residual fuel oil against a fourth quarter export quota of 1,450,000 barrels. The move



was made to "aid in relieving pressure on storage facilities" in this country, taxed by record fuel-oil inventories, with about 6 weeks of fair weather before large scale consumption was expected to begin. Stocks of principal oil products in the hands of refiners and in transit in the first part of the

month were about 42,000,000 barrels larger than at the same time last year.

Oil users were being advised from authoritative quarters, however, that the optimistic picture now in prospect can be changed suddenly by unforeseen contingencies that might result in spot or widespread shortages. The oil and gas division of the Bureau of Mines, forecasting a 19% rise in the 1948 supply of light fuel oil, stressed again that shortages may develop locally if the winter is severe, or if other emergencies occur.

According to expert opinion voiced at the recent sessions of the Interstate Oil Compact Commission, the present supply-demand situation in the industry and the prospect of increased imports will make for stabilization of present petroleum prices. Prices should neither increase or drop in the immediate future, except for special local situations, it was said.

METALS

Stepped up production of steel in the fourth quarter is expected to result in more steel being available to general consumers in the next few months. Allocations for the period have been fixed and further allocation programs are not expected to be set up in time to affect fourth quarter distribution.



Copper production throughout the world has continued at a high rate and figures for this year are expected to show a large increase over those for 1947. Demand is still very great, however, despite the recent increase in price, and stockpiling requirements of the

government are still unknown.

Production of lead, long hampered by labor trouble at one of the leading producer's plants was expected to pick up considerably as the strike ended on September 19. No slackening in the tremendous demand for the metal was evident. Willing customers for even the 22 ½-cent imported lead were to be found. Some hope was expressed that the high price of imports might bring a greater supply into this country in search of American dollars.

FOREST PRODUCTS

Demand for lumber continues at a high rate, but signs of a better supply situation were seen in the industry recommendation of the removal of "oak lumber, and all hardwood flooring with the exception of oak" and other products from export control. The statement said "the acute shortage of lumber in this country is over, and there are many kinds available for export." Prices continue high on the better grades, but there has been some softening in the cheaper grades... The West Coast longshoremen's strike was beginning to have an effect on shipments of lumber from the West carried by water transportation, as this was written... One trade authority recently stated that prices of plywood had passed their peak and the gray market in that product was disappearing.

CHEMICALS

Demand for calcium chloride is still running ahead of supply, and the best hope for an equalization of the two factors lies in a mild winter, cutting down the need for using the chemical to fight cold and ice. Uses for calcium chloride appear to be constantly expanding, intensifying the demand, and causing some producers to allot their production on a historical basis.

An industry committee has informed the government that the production of alkali can now meet the demand and there is no necessity to allocate supplies for export. Soda ash is already in good supply and caustic soda is expected to be in the near future.

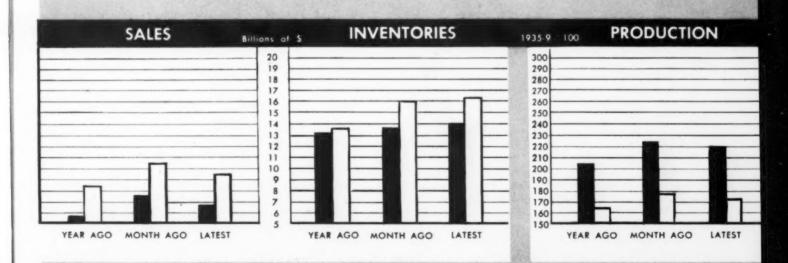
Commencement of operations at the new Shell plant for manufacturing synthetic glycerine in Texas from petroleum, salt and water was being watched with great interest in the market for its effect on supply and on the price of natural glycerine. Exact production figures and prices were not available at this writing, and no predictions were being made, but it appeared obvious that large supplies of synthetic glycerine would have a stabilizing effect on the market over the years.

MANUFACTURERS' SALES, INVENTORIES AND NEW ORDERS

	1947			1948			
Indexes of Value of Manufacturers' Sales	JULY	Feb.	Mar.	Apr.	May	JUNE	JULY
(Average Month 1939—100)		100.	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	- April	,		
tal Manufacturing	270	331	332	324	324	336	306
Durable Goods	285	359	365	352	350	369	331
Iron, Steel & Prod	267	336	345	325	340		
Non-Ferrous Metals and products	310	415	410	415	419		
Electrical Machinery and Equipment	331	446	442	440	431		
Machinery, exc. elec	278	356	363	350	354	1	
Automobiles & Equip	345	424	435	413	382		
Transportation equip. except autos	390	469	501	476	467	1	
Furniture and finished lumber products	215	308	273	256	248	1	
Stone, clay & glass products	223	222	252	274	269		
Other durable goods	227	277	271	255	263	1	
Nondurable goods	262	314	306	307	308	317	291
Food & Kindred prod	286	305	297	299	303		
Textile-mill products (exc. apparel)	235	350	345	333	326		
Leather & products	245	327	300	266	232	1	
Paper & allied prod	288	334	333	332	344	1	
Chemicals & allied prod	280	327	315	334	327	1	1
Petroleum & coal prod	258	336	322	318	335	1	1
Rubber products	298	289	252	312	344	1	1
Other nondurable goods	221	329	341	326	313		1
(Average Month 1939—100)							
tal Manufacturing	250	268	271	271	274	277	281
Durable Goods	270	280	281	284	285	288	289
Iron, Steel & Products	197	205	205	206	213		
Nenferrous metals & products	258	250	257	262	263	1	
Electrical mach. & equip	376	376	384	388	395	1	
Machinery, except elec	275	293	295	297	295	1	
Automobiles & equipment	444	472 627	473	626	631	1	1
Transportation equipment, except autos	630	234	242	255	259	1	1
Furniture & finished lumber products	215			163	159	1	
Stone, clay & glass products	161	163	165	204	192	1	1
Other durable goods	199	257	262	261	265	268	274
Nendurable goods	234	244	243	236	230	200	-/
Food & kindred products	208	249	255	253	256		
Textile Mill products (excl. apparel)	223	238	255	241	254	1	1
Leather & products	213	272	276	276	287		1
Paper & allied products	241	279	289	285	287	1	
	262	178	182	186	197		1
Chemicals & allied products			302	293	302	1	
Petroleum & coal products	164	202		273		1	1
	268 301	283 319	329	332	345		1
Petroleum & coal products	268 301	319		332	345		
Petroleum & coal products	268 301 39=100)	319	329				
Petroleum & coal products. Rubber products. Other nondurable goods. Indexes of Manufacturers' New Orders (Average Month 19)	268 301 39=100) 231	319	329	252	243	265	
Petroleum & coal products	268 301 39=100)	319	329			265 307 240	249 301 217

Source — Department of Commerce, Revised Series

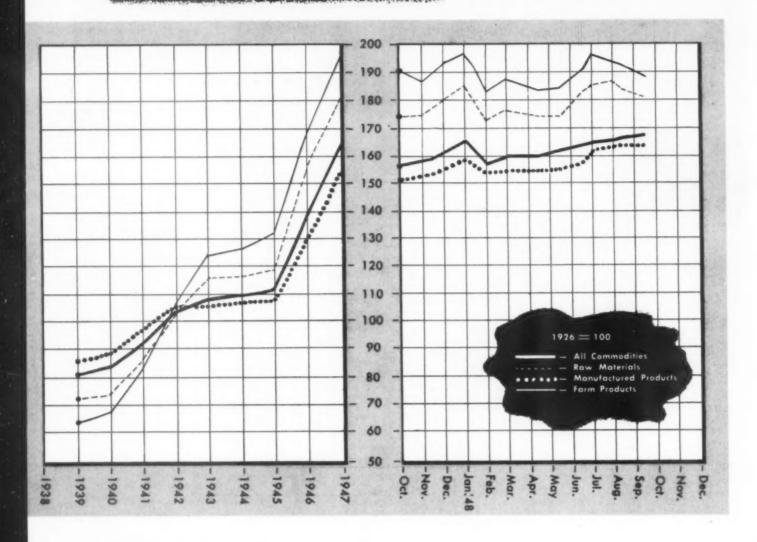
SALES, INVENTORIES AND INDUSTRIAL PRODUCTION



DURABLE GOODS

NON-DURABLE GOODS

The Price Picture



Straws in the Trade Wind

Commercial production of titanium in ductile form, a new strong and highly corrosion-resistant metal, has been announced by E. I. duPont de Nemours & Co., at their Newport, Del. plant. Present price of the metal is \$5 a pound, but company spokesmen said the price may come down sharply if industrial demand warrants mass production.

A new process used in the production of cryolite, a necessary material in the electrolytic reduction of aluminum ore to metal, will lead to lower-cost aluminum, H. W. Heiser, of the research and development department of the Aluminum Company of America, recently told the American Institute of Chemical Engineers.

More than 300,000 metric tons of unassorted, semifinished and finished alloy steel and alloy scrap will be made available in Japan for export sale, it has been announced by Supreme Command-Allied Powers-Foreign Trade, New York, N. Y.

Production of construction materials will set a record this year, in the opinion of the Commerce Department, but "some supply stringencies appear likely to persist through the present year," particularly in lumber and steel products.

Production of trucks and motor coaches this year is expected to hit a new peacetime record of over 1,300,000 units.

The largest food crop, both in volume and value, in history, has been predicted for the United States this year by the Department of Agriculture. The production of all crops this year is 9 index points above the record set in 1946 and 135% of the 1923-32 average.

THE word "preferred" as used in purchase engineering means that a "preferred list" exists and that the burden of proof in purchasing is on any item or any quality not found on that list. Thus tolerances may be of preferred ranges, and so may sizes, types, grades, brands, and production and inspection methods.

Any purchasing agent considering this subject probably will find that his house had been using preferred lists of sorts for years. The published literature on the subject goes clear back to 1922. But he also is likely to find that the lists are subconscious rather than definitely organized. And the specific organization of such lists can lead to important savings and improvements.

Dangers of System

The gains are not unaccompanied by risk. In fact, the hazards of preferred purchasing ought to be considered before organization of a program is begun. Among them are:

1. The preferred lists may become strait jackets. Items not in accordance with the preferred lists are refused consideration, and thus highly profitable changes are

postponed.

2. The lists may become invitations to engineering or product design laziness. It always is easier to "follow the book" than to think, especially about those small details which in the aggregate can be so important.

The risks, then, all are in the chance that the meaning of the word "preferred" will be stretched beyond reason. The policy therefore should be clear that any item on the preferred list is at all times open to challenge.

Potential Benefits

Under this policy a great many benefits can be secured. Among them

 Items can be bought in larger quantities, thus securing lower prices.

The varieties of stock numbers carried in inventory can be reduced, thus simplifying inventory control.

 The amount of engineering time needed for product redesign can be reduced.

4. Visiting salesmen who are informed about preferred lists can reduce the amount of interview time devoted to finding out what the company likes to buy.

5. Maintenance can be simplified and its costs reduced.

6. The servicing of products in the



Reasonable tolerances are an aid to purchasing, manufacturing, and inspection.

Preferred Standards in Purchasing

Definite company policies on materials, methods and design make for economical operation, servicing, and inventory

By E. L. Cady

field can be made more rapid and less costly.

Production line control can be improved.

Sensible Tolerances

In one specific example a maker of printers' equipment dared to buck the general industrial trend and widen the preferred tolerances to which its machine parts might be produced. As is common today the tendency in the engineering department had been to design almost every part to special tolerances. But here the preferred tolerances were designated as limits:

Diameters and lengths up to

0.250 inches, plus or minus .001", on all machined dimensions.

Diameters and lengths over 0.250 inches but less than 2.0 inches, plus or minus .002" on all machined dimensions

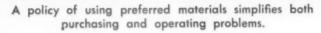
Diameters and lengths over 2.0 inches, plus or minus .002" per inch on all machined dimensions.

Precision castings, plus or minus .004" per inch on all as-cast dimensions.

Sand castings, plus or minus .008" per inch on all as-cast dimensions

As every machinist knows, limits of plus or minus .001" are easy to hold on small dimensions, and if the







A preferred list of bushing and shaft sizes is a practicable policy for design, maintenance, and purchasing.

bottom limit is aimed at when the machine is first started up and is cold, then there is a full .002" tolerance to compensate for the tendency of diameters or sizes to increase as the tools wear slightly and the work stock expands with heat during the day. The preferred tolerances on other dimensions likewise are easy to hold if common sense is used.

An immediate effect upon purchasing was that lower prices upon automatic screw machine products could be obtained. Also, with these broad tolerances more outside contractors were capable of producing the parts and it was less necessary to place orders in distant cities in order to find shops which had open capacity for producing to fine limits.

The preferred list of tolerances was thrown open to challenge. And challenges were plentiful.

Nearly four years were needed for taking up the challenges one by one and finding out just when and why special tolerances should be used. These tolerances were not close enough for dimensions upon which anti-friction bearings were to be mounted, and there were occasions when problems of dynamic imbalances and of rigidities of support required finer work. There are some as-cast dimensions upon which the tolerances had to be wider. But ultimately it was found that only 3% of all tolerances had to be finer than this, and only 5% could with profit

be wider, leaving 95% of all dimensions to which the preferred tolerances applied.

Benefits Are Achieved

One quick effect was found in the field service department. Instead of carrying a book full of specifications of individual parts, the service man was able to measure a worn part, find out whether or not it had worn to a dimension below that of its bottom limit as established by the simple list of preferred tolerances, and thus judge whether or not to replace it.

This also had its effect upon purchasing. The statistical curves of the numbers of parts needed for servicing obsolete machines began to smooth out as all of the service men adopted the same simple standards of judgment about replacements. Thus that highly difficult matter of inventory control, the judging of how many service parts to buy when the need for carrying them is declining at an unpredictable rate, became easier to handle.

Purchasing in advance of design also became easier. Engineering departments continually are wanting to know what the parts for projected designs will cost. Such costs are important to judgment as to the economics of designs. But it is difficult and costly to make full scale drawings in order to get prices on parts which may never be required.

With the tabulation of preferred

tolerances available, the purchasing department and the vendors accustomed to supplying this company alike could make highly accurate guesses as to what quality and cost of work ultimately would be required and thus could quickly work from simple sketches to supply cost information adequate for advance design purposes.

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The program had its obvious effects in standardizing the gages and other inspection devices to be purchased and used. With time, almost every material and supply became judged by its ability to contribute to effectiveness and efficiency as applied to the preferred tolerances. The special conditions which cause so much time to be devoted to buying and inventorying special items were minimized. Purchasing in general had fewer "fuzzy ends", was subject to closer control.

Bushing and Shaft Sizes

A process plant having wide varieties of special equipment to be maintained, laid down a preferred list of bushing sizes and of shaft sizes for all operating equipment.

Shaft sizes were selected by the American Standards Association 10-step series as found in Table 2 of that Association's publication Z17.1-1936. In this series each succeeding dimension is 25% greater than its predecessor, as for example, ½, 5/16, 3/8, ½ inches.

Bushing bores, of course, would be graduated to fit the shafts. But since the load capacity of a bushing is proportional to square inches of bearing area and the area is a function of length as well as of diameter, it was practical to vary the load capacities by varying the lengths.

Length variations were made in accordance with the same table. And with the added proviso that all outside diameters of bushings up to 3-inch bore were to be such that any bushing when worn could be bored out to fit the next larger preferred size shaft, the preferred list of sizes

was complete.

Purchasing of standard sizes of cored bushing bars for this program was easy enough. But that was where the immediate simplicity

stopped.

Stock gears, as rapidly as new ones were ordered, had to have their hubs bored to take the preferred sizes of bushings. Sometimes this required special hubs at extra prices. Gear reducers and other devices likewise became somewhat "special". There were understandable delays in the receipt of some parts and mechanisms.

Program Took Effect

With time the program took effect. As the usual shower of worn parts came pouring down to the repair shop, they were rebored, rebushed, tubular weldment members added so that longer and larger bushings could be used.

It was possible to argue at any time that design refinements were being ignored, that the great majority of bushings were of greater capacities than were needed, that power and lubricants were being wasted. But when a bearing failed in service a definite increment in capacity was added until it was known that the bearing was adequate. When the teeth of a gear failed in service the bushing almost always could be salvaged and rebored to a larger size. The sizes of shafts needed to be kept in maintenance stock were known. Maintenance mechanics when not otherwise employed could turn down worn shafts to the next lower preferred diameters, or could bore out worn bushings. No one had to guess at the dimensions to which to machine worn bearings members, the next preferred size beyond the worn one always was known.

Within two years, the costs for maintenance labor and supplies began to go down steadily. Inventory control became easier.

The only valid measure of maintenance costs must be based on shophours worked if the ratio of employment to equipment is low, or on manhours worked if the equipment is manually controlled and the ratio of employment to equipment is high, or on some other figure which relates the amount of equipment maintenance to the amount of equipment use. On the basis of shop-hours worked, this system of preferred bearings sizes and capacities reduced maintenance costs by more than 20% a year within the first three years.

Standard Type Face

A company which issues wide varieties of printed pieces for sales promotion use adopted a preferred

type face.

The type selected was sans-serif, blacker and heavier than ordinary although not bold face, and of a width which justifies in number of characters per inch very much like the pica type in ordinary use on type-writers

Engineers who created copy for the sales pieces were instructed to set their typewriter margin stops at 15 and 75, thus giving an average of 60 characters (including spacings) to the line. With copy so written, the engineer could count his lines and know how much printed space his copy was likely to take.

Copy was rewritten in the advertising department, as is usual. But more of the rewriting was done to improve it as copy, less with the headaches of getting the engineer to confine himself to the available space.

This alone was a time saver and an eliminator of management friction. But the real savings were in the fact that the printer had less planning and fitting to do. All of the work which the typographical shop does in fitting copy to spaces has to get on the printing bills somewhere. And since the number of print shops having good typographical facilities is low, it followed that more printers were able to quote on copy as laid out for the preferred type face and the purchase costs of printing went down.

As a by-product, the clear and plain black type face was ideal for photo offset. Pages could be picked from different printed pieces and assembled to create small runs of special pieces for limited direct mail campaigns. The company even created special letterheads for special campaigns in this way.

Heat Treating Simplified

A business machines maker selected a preferred type of sheet steel and a preferred heat treatment for it. The idea was that, in spite of good precision tolerances on all parts, the alignments of more than eighty sheet steel cam shapes in the final assembly would not be perfect. With a sheet steel of the required stiffness, and a cyanide type of salt bath hardening which was designed to be mostly carburizing and very little nitriding in the case it imparted, it was possible to have cam shapes of the requisite wear resistance and yet permit the assembly line operators to (Please turn to page 292)

In the purchase of precision castings, it may be good policy to adopt the supplier's preferred material.



Purchase Paint on Performance

By William Goettler

Satisfactory quality and color standards can best be maintained by specifying the required results and leaving the formula to the manufacturer's research and skill

NE of the exacting problems faced by purchasing agents in many industries is well exemplified in the case of railroad car manufacturers. Railroads must maintain standard colors on their equipment for twenty years or longer. Interiors of passenger cars require the most delicate and uniform shadings. Matching of even the elaborate color schemes of streamliners must be made at various intervals.

When their regular suppliers have been unable to satisfy the greatly stepped up demand, some purchasing agents have had difficulty in maintaining standards of color and qual-However, the Pullman-Standard Car Manufacturing Company of Chicago, which has this problem in a very high degree, handles the situation to everyone's satisfaction by observing a few basic principles established through many years of experience in paint purchasing. Briefly stated, that policy may be summed up as follows: Select dependable manufacturers and make them responsible for specified color and quality-these are the simple fundamentals that will take most of the headaches and hazards out of paint buying.

"Despite the fact that various manufacturers use raw materials from different sources, as well as different formulas, nearly any one of them who has the proper engineering skills can match the color samples within close tolerances," says Frank Vit, who for years has bought paint for Pullman-Standard.

Just what are acceptable tolerances? These vary, of course, with the purpose, but standards for railway passenger cars are among the highest.

Ordinarily all paint of one shade for a modern passenger train is bought not only from one manufacturer, but from one batch. Where paints must be matched for cars manufactured at different times, the rule is, can the ordinary eye detect the difference? Ordinarily two degrees are a fair tolerance.

The decorator will see a variation in shade when the closest practical match is placed before him. However, the ordinary person will not distinguish differences in exteriors of cars in the same train. Even the experienced decorator in passing from one car to another will not usually distinguish the slight differences of interior shades that manufacturers require in making matches.

Problems of Matching

Color control is more difficult than one might expect. Batches of paint must frequently be remixed in order to obtain required shades. So little additional pigment may be needed that often a shade is "kicked back" from one side of the standard to the other.

Additional materials must be added with each mixing in order to maintain the formula demanded for performance. The result all too often is a batch of paint much larger than the order.

One manufacturer told of an order for 4,100 gallons that was "kicked overboard" several times before the color tolerance was accepted. He ended with some 4,800 gallons. Not only did he have to dispose of the extra paint elsewhere, but the order was delayed. Each time the colors had to dry before accurate comparisons could be made with the standard chip.

Small orders required for touching up work are the most difficult to fill. Slightest variations in pigments may make remixing necessary. An order for 15 gallons may become 25 gallons of actual mixture. Needless to say, the manufacturer usually accepts these small orders merely as an accommodation. If he knows that a tolerance will be accepted consistently on one side of the standard, the problem is simplified.

Another safeguard against color

variation over a long period of time is submission once a year of a standard color chip to manufacturers from whom paint is purchased.

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Manufacturers at various times have prepared plastic decks with a wide variety of standard shades, but even these assortments proved inadequate for the needs of decorators. The latter constantly demanded shades somewhere between the standard chips. Paint processors were left with no alternative but to supply the requirements within the closest possible tolerances.

More nearly normal supplies of raw materials have made the problem of matching color and performance much simpler for paint manufacturers. Gone are the wartime shortages of various ingredients, which made necessary different substitutions in almost every batch of paint that was processed.

Raw Materials Available

Under these conditions it was practically impossible to predict the results. Close matches were out of question, and many companies had to depart from their standard colors.

While a number of ingredients still are not plentiful, particularly titanium and coal tar reds, blues, and yellows, there definitely are enough for quality paints. Reds were especially handicapped because they were manufactured from the same raw materials as atabrine, the synthetic quinine used by the army.

Furthermore, while government stockpiling apparently has cut into the quantity of materials already in shortest supply, none of the considerable number of both paint manufacturers and purchasing agents contacted in this study expressed any real apprehension about supplies for the immediate future. Another coal strike or more extensive government purchases would, of course, upset present calculations.

"If supplies of paint are down, so

will be the quantity of steel and other materials on which to put the paint," was the usual comment.

Pullman-Standard maintains its own testing laboratories where performance is checked through the use of weatherometers. This device accelerates weathering effects so that the wear and tear of several years on paints can be concentrated into a few weeks.

Also, the paints are checked for any ingredients that might be harmful to men applying them. Lead content particularly is determined in order to safeguard against quantities greater than necessary for top performance.

Formula Not Specified

The company, which is more than ordinarily concerned about the safety of its workmen, uses special precautions such as masks, should lead or other ingredients be present in quantities great enough to affect health of the men.

No attempt, however, is made to analyze the formulas of paint. That would result in delays of two weeks or more. Also, with the exception of a few paints used for special purposes, there is no research to develop formulas.

"We select manufacturers upon whom we can rely, and put our faith in them—that's basic in paint buying," Mr. Vit said. "Then we outline the purpose, the conditions under which paint applications must be made, and the performance expected. Our experience is that the manufacturer's recommendations are nearly always 100% correct. In the rare cases of failure under normal conditions, we feel that the manufacturer should be responsible."

When a paint drops below expectations in performance or fails entirely—and this does happen to the best of paints occasionally—the matter is called to the manufacturer's attention, and he is expected to make an adjustment. From the beginning, the manufacturer is left to do most of the worrying about the proper fulfillment of an order.

"It is undesirable to outline specifications and formulas for paints, or to specify how they are to be manufactured," Mr. Vit explained. "That would relieve the suppliers of responsibility for their performance. The paint manufacturers have research laboratories and engineers to improve continually the quality of paints. It would be unwise not to consider the advantages of these facilities to the fullest possible extent.

"The paint field is large, and no one can know more than a small part of it," he added. "Therefore we leave most of our paint problems to those familiar with the many ramifications of the industry."

Quality Is Improving

Nearly every purchasing agent contacted agreed that most paints have been improved considerably in the last eight years, and that all are at least the equal of prewar paints.

A great amount of research is now underway in the paint field, and laboratory costs have become a major source of overhead for the paint manufacturers.

While formulas and processes used in paint processing remained nearly constant for a long period of time, there now are new developments continually. Users of paint, who necessarily are limited in research facilities, would be behind advancements in the industry.

A few of the extremely large consumers who process their own paints have extensive laboratory staffs, but industry in general has found it uneconomical to duplicate the research of the paint manufacturers. Most declare that they have too many research problems within their own manufacturing field to divert attention to problems upon which the paint industry already is working.

Outlook for Pigments

The matter of matching colors and performance in paints from various manufacturers remains a concern for the purchasing agent largely because of many long-range uncertainties. Some paint manufacturers themselves recommend that the buyer attempt to have more than one dependable source of materials.

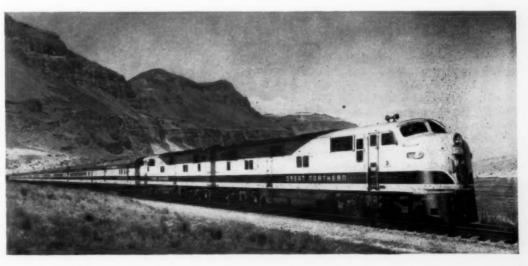
While government stockpiling and the European Recovery Plan by themselves might not be great complications, these could suddenly become serious in conjunction with strikes or other unforeseen difficulties.

Titanium, for which there is no substitute in whites for exterior uses, remains barely ample, but the construction of new processing plants for this pigment is calculated to make supplies plentiful within possibly a year. One complication here is that the government has filed anti-trust suits against several of the manufacturers. It is a question whether or not the suits will delay completion of the plants.

This pigment was formerly processed from ore brought back as ballast from India. When the Indian supplies were shut off partially by British export duties, manufacturers here turned to the native ores, but these required a somewhat different manufacturing process. Some alteration in equipment had to be made.

Little labor is required. The ti-(Please turn to page 326)

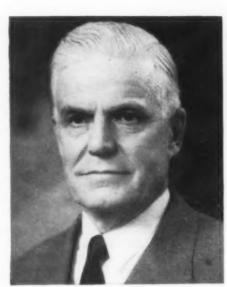
The Great Northern's "Empire Builder" is one of five complete trains recently built by the Pullman-Standard Company. Exterior and interior colors and finishes are an important part of the purchasing responsibilities on such projects.



Greater Flexibility for Military Procurement

Negotiated contracts, research and development work, participation of small business, control points on demand and inventory, and delegation of authority feature new procurement policies

(Photographs by courtesy of the U. S. Air Force)



Arthur S. Barrows, Undersecretary of the Air Force, believes in delegating authority to the military purchasing officers at the operating



Brigadier General Horace A. Shepard is Chief of the Procurement Division, Air Materiel Command, at Wright-Patterson Air Force Base, Dayton, Ohio.

WHEN the President signed the Armed Services Procurement Act on February 19, 1948, he wrote to the Secretary of Defense as follows:

"The Act states the basic policies of the Government with respect to procurement by the Armed Services. It declares that a fair proportion of all procurement shall be placed with small business concerns. It also states that purchases and contracts for supplies and services shall be made by advertising, except under circumstances specified in the Act where exceptions to this general policy may be made.

"This bill grants unprecedented freedom from specific procurement restrictions during peacetime. That freedom is given to permit the flexibility and latitude needed in present day national defense activities. The basic need, however, remains to assure favorable price and adequate service to the Government. To the degree that restrictions have been diminished, therefore, responsibility upon the Defense Establishment has been increased. There is danger

that the natural desire for flexibility and speed in procurement will lead to excessive placement of contracts by negotiation and undue reliance upon large concerns, and this must not occur.

"For these reasons, I am asking you to specify detailed standards to guide vour procurement officers concerning the placing of business with small concerns and the circumstances under which they may waive the general policy of advertising for bids. It is of great importance in procurement matters to establish standards and definitions to guide all personnel who have authority to place contracts. Otherwise, differences in interpretation and policies may result in imprudent contracts and give rise to doubts about the wisdom of this new procurement system."

The unprecedented freedom from specific procurement restrictions which the President mentions is embodied in Public Law 413, and provides for 17 exceptions under which the services can place procurements without advertising.

Some of these exceptions are not

new. The practices which they permit have been followed by one or more of the services as a matter of routine procedure, through one means or another. But the law does give these practices full legal sanction.

The new provision giving the services freedom from prewar red tape is the first exception under the law, which permits placement of purchases without advertising if: ", . . determined to be necessary in the public interest during the period of a national emergency declared by the President or by the Congress."

This is not particularly startling, except that present thinking in Washington does not even contemplate a period when a national emergency does not exist.

Another new peacetime exception to the advertising requirement is the one permitting negotiated purchase "for any service to be rendered by any university, college, or other educational institution."

When it is considered that the services now are buying the largest dollar volume of brains in peacetime history, this exception turns out to

be guite an item. To be specific, the Navy is spending \$225,000,000 in research; the Air Force is spending roughly \$143,000,000, while the Army is spending \$80,000,000.

Another section of the law which embodies the leeway granted for experimental and research contracts

reads as follows:



Brigadier General Alfred A. Kessler is Director of Procurement and Industrial Planning in the office of the Deputy Chief of Staff for Materiel, at United States Air Force Headquarters.

"The agency head determines that the purchase or contract is for experimental, development, or research work, or for the manufacture or furnishing of supplies for experimentation, development, research, or or test: Provided, That beginning six months after the effective date of this Act and at the end of each six-month period thereafter, there shall be furnished to the Congress a report setting forth the name of each contractor with whom a contract has been entered into pursuant to this subsection since that date of the last such report, the amount of the contract, and, with due consideration given to the national security, a description of the work required to be performed thereunder.

An important section of the law which is designed to permit purchase of spare parts of a uniform nature, assuring standardization and inter-changeability, reads:

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"For equipment which the agency head determines to be technical equipment, and as to which he determines that the procurement thereof without advertising is necessary in order to

assure standardization of equipment and interchangeability of parts and that such standardization and interchangeability is necessary in the public interest."

Then there is a section of the law which cuts the red tape on aircraft procurement. This provision eliminates the necessity of advertised bids



Colonel Phillips W. Smith has specialized in military procurement for the past twelve years. He is special assistant to Lieutenant General Howard A. Craig, Deputy Chief of Staff for Materiel, U. S. Air Force, in matters of procurement.

"for supplies of a technical or specialized nature requiring a substantial initial investment or an extended period of preparation for manufacture, as determined by the agency head, when he determines that advertising and competitive bidding may require duplication of investment or preparation already made, or will unduly delay procurement of such supplies.

Obviously, when one company develops an airplane type for the specific needs of a branch of the service, it is sheer waste of effort to go through the formality of procurement bids. The initial preparations by the developing company to go into production make open competition for the production contract impossible.

One of the new sections provides for negotiated purchase when bids which have been submitted appear

Another new peacetime provision permits the services to place educational orders. This is rather deviously worded, but nonetheless is designed and interpreted to permit placement of such orders by the serv-

ices. This section permits placement of contracts without advertised bids

"The agency head determines that it is in the interest of the national defense that any plant, mine, or facility or any producer, manufacturer, or other supplier be made or kept available for furnishing supplies or services in the event of a national emergency, or that the interest either of industrial mobilization in case of such an emergency, or of the national defense in maintaining active engineering, research and development, are otherwise subserved: Provided, That beginning six months after the effective date of this Act and at the end of each six-month period thereafter, there shall be furnished to the Congress a report setting forth the name of each contractor with whom a contract has been entered into pursuant to this subsection since the date of the last such report, the amount of the contract, and, with due consideration given to the national security a description of the work required to be performed thereunder.'

It is interesting to see what the services are doing with these new powers. The two service agencies which are the most important factors in purchasing on today's market are the Air Force and the Navy. The Army is expanding its operation, but the volume of purchase in foods and textiles is not likely to have a domiating influence on the market.

On the other hand, the expansion of the air arms of both the Air Force and the Navy will have a considerable impact on supply, and therefore will be a factor to be considered by all in-

dustrial purchasing agents.

Most important indication of the Air Force postwar procurement policy is the personality and background of Undersecretary of the Air Force Arthur S. Barrow. He is an energetic, quick-moving executive, with a long-term background in chain store merchandising — first with Montgomery-Ward, and then for 20 years with Sears Roebuck.

The major facets to Undersecretary Barrows' policy are decentralization of procurements and delegation of

authority.

By decentralization, the Air Force envisions Washington as establishing policy, with purchasing done at the operating level. In view of the fact that most operations and supply stem from Wright Feld, procurements still are largely centralized at that point.

On the subject of delegation of (Please turn to page 300)

Coordinated Inventory Control

MANUFACTURER - DISTRIBUTOR - PURCHASER

By Thomas B. Dancey

Manager of Procurement and Traffic Detroit Ball Bearing Company of Michigan

Editor's Note: A development of more than ordinary interest and significance is the widespread keen interest in inventory control as a part of sound purchasing policy and procedure under present business conditions. Several articles, in this and other recent issues of PURCHASING, have suggested that the responsibility for maintaining inventories might well be more equitably shared between the buyer and the supplier, and several concrete proposals have been made looking to this end. In these discussions, the position of the distributor—

who is both a buyer and a supplier—has perhaps been overlooked as an essential factor in the situation. The stock function looms large in the distributor's operation. In the flow of goods, the distributor stands squarely in the middle, and within the distributor's organization the purchasing agent is in the middle. The accompanying letter, sent to suppliers by the purchasing officer of a representative distributor of industrial supplies, brings out an important facet of the problem.

To Our Suppliers: Subject: Is Your Obsolescence Policy Obsolete?

Frankly, I have never liked the term 'Obsolescence' the way it has long been in common usage in the bearing industry. A dictionary definition of the word 'obsolete' shows it to mean: Gone out of use; of a discarded type. Surely, this does not apply to all but a very small part of the merchandise a distributor might seek to return to the manufacturer for credit. It is much more likely that the sizes returned reflect principally those which may have become inactive within a limited territory, or those in which overstocks have resulted through too optimistic forward buying, as well as certain factors beyond the control of the distributor. These returned sizes are almost always those which can be quickly placed in re-circulation by the manufacturer who enjoys a national and perhaps international distribution. For the purpose of further discussion, I will drop the term 'Obsolescence Policy', a misnomer in my estimation, and replace it with a more accurately descriptive term, 'Inventory Control Assistance Plan'.

In the past, it has been the commonly accepted policy of bearing manufacturers to accept return for credit of bearings up to a certain set percentage of the distributor's total purchases over a predetermined period. No exception is taken to this long established practice. However,

in most cases, a 10% handling or restocking charge has been made against the distributor availing himself of the established provisions. Exception is taken to the latter feature

For some time several of our sources have permitted such returns to be made without the 10% penalty, and within the past several weeks one of the largest of bearing sources has discarded the 10% charge in favor of 'no penalty' on returned merchandise. We, of course, are now speaking of the returns made on a semi-annual basis, or in less frequent cases on an annual basis. All of our sources have accepted returns without handling charge in the event of clerical errors and errors in ordering, on our part or that of our customers, and where these returns have been made promptly and with special permission from the source of purchase. For competitive reasons we generally must waive any handling charge when accepting the return of merchandise from our customers.

It is our suggestion that your company give serious thought to the establishment of an up-to-date Inventory Control Assistance Plan, whereby the distributor may from time to time balance his stocks without suffering a monetary loss on the merchandise returned. There are some very good reasons for so doing.

In the first place, your authorized distributors are the final link in your distribution system. They should be

looked upon as a definitely related extension of your company's operations, and not as something entirely separate and apart from you. The distributor represents your company in the field; he carries the burden on ample stocks in his bins and on his books, thereby reducing your-the manufacturer's inventory load. It is reliably stated that the charge of carrying an inventory amounts to from 10 to 12% per annum. Consequently, when matters of return for credit are considered, it is well that the distributor be thought of as a real part of your organization and not just another customer.

Secondly, why should there be a need of returning merchandise for credit? Having personally had a long term experience in a large manufacturing industry, and more lately as a buyer for a bearing specialist organization, I can see a vast difference in the problems of a buyer for production and those of one who buys for resale in the replacement field. The production buyer is furnished with definite production schedules which enable him to place his requirements with a great degree of mathematical certainty. this, his main problem is that of maintaining an even flow of the material necessary to the meeting of his factory schedule.

The buyer for resale to replacement accounts is working on a much less definite basis. The usage of

(Please turn to page 298)



D IG in or perish! That is the choice which the United States will face in the event of a World War III, according to the author of a new book entitled "The Price of Power" (By Hanson W. Baldwin, 361 Pages, Harper & Bros. N. Y., 1948).

The thought that we shall have to become a race of cave-dwelling troglodytes to survive the diabolic engines of destruction which our vaunted civilization has evolved is terrifying. If such an idea had been presented by a person less qualified in such matters than the experienced Hanson W. Baldwin it might be considered a phantasy worthy of the imagination and pen of a Wells or a Jules Verne. But the opinions and conclusions of the author are reinforced by the results of eighteen exhaustive conferences between recognized experts in every field of political and military science.

World War II radically altered our concept of the United States as an impregnable fortress moated by two oceans, but it is doubtful if many of us realize how much further we shall have to amend our notions of national security by even the threat of a World War III. The author opens with this thesis:

"The rise of nation-states, population growth, the industrial revolution and now the technological revolution have made war 'total' in the widest sense; and 'defense', if it dominates the military thinking of a nation, a The traditional concentration of our national industrial facilities makes us exceedingly vulnerable; dispersion for tactical and physical security is an essential policy in an atomic world

By Grey Leslie

term synonymous with defeat and completely incompatible with modern reality. No theory of 'limited liability' or defensive strategy or tactics can win the war of tomorrow. In the twentieth century of the atomic bomb, supersonic missiles, long range jetplanes, and high speed submarines, the strategic problem for the United States is not defense against massive invasion, but protection against massive assault."

Included in our own attempts to save ourselves are the larger problems of preserving Western culture. There is nothing idealistic in that concept because the greatest values of Western civilization are here. The United States alone, of all the great nations of the earth, was undamaged by the ravages of the war. The United States alone now has the material assets to preserve the kind of civilization that we cherish.

We cannot dismiss as a false alarm the assertion that in another war the United States will be the first to be attacked. It would be sheer folly to believe that because the fighting in the last two wars was not brought to our own shores, we are immune. We learned from World War II that modern war is total, in the literal inclusiveness of that word, and in any future war our entire strength and resources will be tapped. Every civilian and every productive facility will become an integral part of the war machinery. We know now that the victory in World War II was an industrial victory in which the mines, factories, and man-power of the United States supplied the Allied nations of the world. The price of the victory seriously depleted some of our basic mineral reserves and now makes us dependent on imports of many essential raw materials. We now know that the "arsenal of democracy" is not inexhaustible.

The forecast of the future fabulous means of warfare clearly indicates that the offense will far outstrip any defense, and that the only realistic defense will be the threat of devastating retaliatory action. Ap-

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praising these facts, Mr. Baldwin lucidly states several problems that the new concepts of war force upon us. How are we to prepare a defense which must in fact be a formidable offense, "in peace-time in a peace-loving non-imperialistic democracy?"

It is here that Mr. Baldwin draws heavily on his own wide experience, augmented by the solid opinions of his colleagues of the Council on Foreign Relations. His opinions and suggestions merit the serious consideration of every citizen of the nation not only because he himself has earned the right to be heard on such matters but because his opinions have been tested on the stithy of experience. He analyzes our economic, political, military and psychological positions in a series of closely written and highly informative chapters. It is not comfortable reading because no realistic presentation of the subject could afford much comfort. But the deadly seriousness of the position of the United States and its very survival require a mental discipline to shock us out of complacency.

Role of the United States

Fixing the position of the United States, Mr. Baldwin states:

"These considerations frame and denne the role of the United States in the modern world. It is a role similar in some ways to that once occupied by Great Britain; we are now the banker nation, the creditor nation. the exporting nation, the great sea power, the great air power, the nexus of world communications. Much as Rome was the center of the world of its day, Washington is the center of the Western world in the twentieth century. But there is a rival capital -and its name is Moscow. For any realistic statement of political facts must recognize that the world today is two worlds, and that conflict between Moscow and the West, another chapter in the vast eternal struggles of man already has been joined. This conflict is as real as the air about us, and as palpable as the earth; we cannot escape it or change it or avert it by Nice Nelly thoughts or by believing only what we wish to believe. Historical experience proves it; great power groupings inevitably develop friction points. But there is more than the experience of history to prove the existence of conflict between Russia and the West. The political, economic and ideological differences between Russia and the United States are too major to blink. A frank understanding and recognition of these differences must be the

basis upon which any American policy is based. There is the conflict of economics—the economy of capitalism with its profit incentive, its free enterprise system and its past record of tremendous productivity and cyclic strain, and the economy of communism, with state ownership and control, elimination of capital gains and the governmentally controlled utilization of man power, including slave labor as an economic commodity."

Mr. Baldwin gives a balance sheet of the nations we might reasonably expect to be on our side in the event of conflict. It is not too reassuring. Twelve such nations might be expected in a coalition on the side of democracy. Twelve would be on the side of Russia. Five must be classified as uneasy, even uncertain, neutrals—Norway, Denmark, Sweden, Switzerland and Eire. Spain must be considered outside our orbit. Italy, Germany, France, the Middle East, India and China could well be the explosive points for the new conflict.

The destructive potentials of the atom bomb are fully weighed and Mr. Baldwin's restrained optimism gives us a modicum of hopefulness in the opinion that other nations will not possess it in sufficient quantities to be strategically effective for at least a decade. But there are other new and equally lethal weapons, even more frightening, because of their immediate availability. The author lists more than forty known agents of chemical warfare that could be used to attack human, animal and plant life by easy transmission. In the development of guided missiles, atomic dusts and chemical gases, mankind has created the seeds of his own destruction, for which there is no defense and which no factories, however productive, can possibly overcome.

Industrial Dispersion

Where then does our security lie? Mr. Baldwin's thesis emphasizes that the price of power for the United States is that we must pay for it by "dispersion and digging".

Actually there is already a considerable degree of industrial dispersion under way in the United States. There is a natural tendency on the part of major industries to drift away from large urban centers. In 1939 it was estimated that almost forty billion dollars in industrial plants were located in the New England, Middle Atlantic and South Central States. Between 1940 and 1945 twenty-five billion dollars of new in-

dustrial facilities were added, but more than half of this increment was deliberately located in the West and South Central States. Mr. Baldwin states:

"This must be encouraged, fostered and promoted by government; industries with military contractsparticularly the new plants that may have to be built to supply the new weapons and equipment-must be required, as part of these contracts, to build in small cities or rural areas of the government's own choosing. Some manufacturing plants-notably those that are vital, like Oak Ridge and the Hanford Engineering Works -both keystones of the atomic bomb project, must in time be duplicated elsewhere and/or put partially underground."

Underground Plants

The detailed reports resulting from close study of the German subsurface war factories remove many of the misconceptions accumulated about underground plants. These studies are supported by the record and show that workers quickly became accustomed to the new conditions, and in fact, eagerly sought employment in them in the days of the heavy aerial bombings. It was reported that efficiency was even greater in such establishments because of the psychological effects of reasonable safety.

It is obvious that any industrial dispersion on a large scale is a project utterly beyond the capacity and resources of private industry to accomplish. The far reaching consequences of even a migration from the urban centers, without considering the staggering cost of sub-surface structures, are stupendous. Government must gradually but definitely lead the way by locating pilot plants for the production of vital war material. Some facilities are already "dug in"; our stocks of atomic bombs and fissionable materials are protected underground.

In the light of the accrued experiences of World War II, we shall have to re-study our entire power and transportation systems to lessen their vulnerability in the event of an international crisis. Our gigantic dams, and the TVA particularly, must be tied into a national power system with stand-by and emergency equipment.

"The Price of Power" is so packed with vital information, solid reasoning and sensible conclusions that no brief review could possibly do it jus-

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The P. A. and the Public Contracts Act

By William R. McComb

Administrator Wage and Hour and Public Contracts Divisions U. S. Department of Labor

ALTHOUGH considerably lower than the levels reached during the war years, Government procurement continues to be a highly important source of business, as a result of the vast purchases being contracted daily for the large military and civilian operations of the Government at home and abroad, and the influence of the European Recovery Program.

The role of the purchasing agent looms clearly in this scene of increasing activity because of the importance attached to his function of helping his plant get the orders out. Where and under what conditions a producer of goods for the Federal Government receives help in filling a contract is a vital matter under provisions of the Walsh-Healey Public Contracts Act, which applies to Government contracts for the manufacturing or furnishing of materials, supplies, articles and equipment in amounts over \$10,000.

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On the shoulders of the purchasing agent, therefore, falls the responsibility of seeing that the purchases he may negotiate to complete a Government contract do not subject his plant to unexpected liabilities. For, in addition to imposing on the primary contractor strict adherence to its basic wage, hour, safety and health standards, and restrictions on child labor and convict labor, the Public Contracts Act, under certain conditions, extends the liability of primary contractors to the operations of other employers.

The realities of industry are recognized in the Rulings and Interpretations adopted by the Wage and Hour and Public Contracts Divisions of the United States Department of Labor for administration of this Act, under which more than \$130 billion worth of contracts have been let since its adoption in 1936. By distinguishing between a "subcontractor" and a "substitute manufacturer", provision is made for the manufacturer who ordinarily, in keeping with a regular practice in his industry, may purchase



The responsibility of a purchasing agent engaged in the fulfillment of government contracts may involve his suppliers' way of doing business; familiarity with the regulations may avoid serious penalties

materials, supplies, articles, or equipment necessary for the manufacture of the product called for in a Government contract without extending his liability to the source from which he obtains such goods. The vendor of such goods is considered a "subcontractor", and the work performed by him is not deemed subject to the Public Contracts Act.

Entirely different, however, is the position under the Act of the firm which is a "substitute manufacturer". There is a definite obligation on firms which are "substitute manufacturers" within the meaning of the Act, and when a purchasing agent makes a transaction which places another firm in this position, he should realize the obligations which are entailed under the Act for both firms.

The Rulings and Interpretations specifically point out that: "When a contractor undertakes a contract subject to the Public Contracts Act he assumes an obligation to manufacture or furnish the commodities required under the labor standards of the Act. He may not relieve himself of this obligation merely by shifting the work to another."

How this obligation may extend to work performed outside the contractor's establishment—to a "substitute manufacturer"—is covered by the warning that: "If, for example, a contractor is awarded a contract subject to the Act as a manufacturer, that contractor is liable jointly with the substitute manufacturer for any acts or omissions on the part of a

GOVERNMENT BUSINESS IS STILL BIG BUSINESS NUMBER AND VALUE OF CONTRACTS LET UNDER PUBLIC CONTRACTS ACT

Fiscal Year	Number of Contracts	Value
1937 (9 months)	3,223	\$177,788,704
1938	5,158	294,952,682
1939	6,396	528,392,756
1940	9,324	799,732,540
1941	24,333	5,085,693,733
1942	59,536	15,867,769,189
1943	101,224	30,935,631,889
1944	98,167	30,216,662,189
1945	131,733	35,965,367,88
1946	35,596	5,443,078,85
1947	19,303	1,656,594,609
1948	21,413	2,360,104,62
TOTAL	* 514,406	\$129,331,769,65

^{*}Does not include secret contracts let during World War II

substitute manufacturer which would have constituted violations of the contractor's contract if he had performed the contract in his own plant and had committed such acts or suffered such omissions in connection with that performance."

No specific warranty of compliance with the Act's provisions need be obtained from the substitute manufacturer. The arrangement for effecting compliance is left entirely between the contractor and the second

However, since the Act imposes liability for "any breach or violation" of its labor standards on "the party responsible therefor", the Divisions hold the substitute manufacturer a "party responsible" also. So, substitute manufacturers may be held individually liable, as well as through the primary contractor.

Purchasing agents, therefore, should be at least generally familiar with the provisions of the Public Contracts Act. Although administered jointly with the Fair Labor Standards Act, the Public Contracts Act differs from the former Act, the more-popularly-known Wage and Hour Law, in many respects.¹

The Public Contracts Act is the only Federal statute which fixes safety and health standards for manufacturing industries, requiring that

goods supplied on a Government contract be manufactured or furnished under safe and sanitary working conditions. Compliance with the safety and health standards of the State in which the work is done is *prima facie* evidence that employers are complying with these provisions of the Public Contracts Act.

In accordance with its fundamental purpose—to assure that products made and supplied the Government are manufactured and handled by workers under basic labor safeguards—the Public Contracts Act is specific about who may obtain contracts. Every contractor must be a manufacturer of or a regular dealer in the materials or supplies to be furnished.

Contractors may meet contracts out of stock on hand or manufactured before the contract was awarded, the provisions of the Act not being applicable retroactively to work performed before award of a contract. However, any further processing, packing or shipping of goods on hand after the date of award of the con-

tract must be performed in accordance with the Act's provisions. Where contracts are filled in installments, the provisions of the Act apply until the full contract is satisfied.

Compliance with the provisions of the Public Contracts Act is not regarded as difficult. Nevertheless. many contractors have been found tobe in violation, either through inadvertence or design. Employers in violation who fail to pay the wages due under the Act are liable to the Government for liquidated damages in the amount of the unpaid wages. Violations of the restrictions on employment of minors-boys under 16 and girls under 18 years of age-or convict laborers, mean damages at the rate of \$10 per day for each minor or convict laborer knowingly employed in the fulfillment of con-

Damages paid by contractors found in violation of the minimum wage and overtime provisions of the Public Contracts Act represented a significant part of the more than \$10,700.000 in back wages owed by employers under both this Act and the Wage and Hour Law during the 1948 fiscal year. In addition, violations of the child labor provisions of the Public Contracts Act cost 105 contractors about \$235,000 in damages.

Perhaps more important than money costs is the fact that any contractor who is found to have violated the Act runs the risk of being held ineligible to receive Government contracts for a three-year period.

In many instances, workers covered under the Public Contracts Act also are under the broader coverage provisions of the Wage and Hour Law, which applies to employees engaged in interstate commerce or in the production of goods for interstate commerce. However, there is no single minimum wage under the Public Contracts Act, as there is under the Wage and Hour Law, which provides a 40-cents-an-hour minimum.

Instead, the Public Contracts Act requires the payment of not less than the minimum wages as determined by the Secretary of Labor to be the prevailing minimum wages for persons employed in specific industries. To date, such wage determinations have been made for 42 industries or parts of industries. None of these wage determinations sets a minimum lower than the 40-cent hourly rate provided by the Wage and Hour Law.

It, therefore, is important for em-

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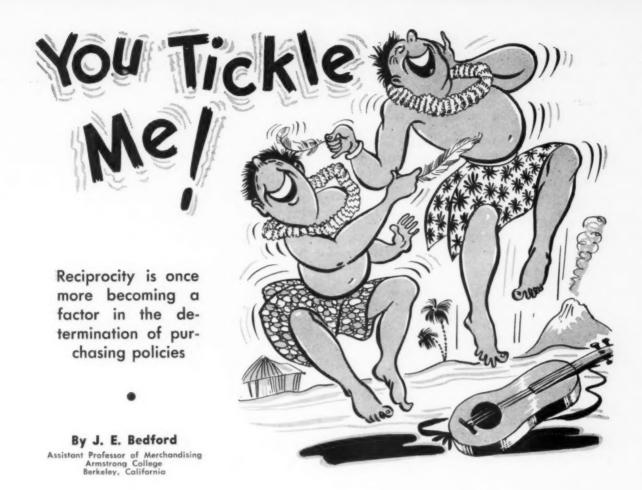
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¹Copies of the Public Contracts Act Rulings and Interpretations may be obtained without cost upon request to the headquarters of the Wage and Hour and Public Contracts Divisions, U. S. Department of Labor, Washington, D. C., or from regional offices in Boston, New York, Philadelphia, Birmingham, Cleveland, Chicago, Kansas City, Dallas, and San Francisco.



N Hawaii there is a business practice known by the name, Hoomalemale (pronounced hoo-molly-molly). The literal translation of this Hawaiian term is: "You tickle me and I'll tickle you." In the Purchasing Agent's vernacular this same business practice is called reciprocity.

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Whatever the practice is called, it is a perpetual question facing everyone connected with policy making for business. In its mildest terms it is just purchasing from customers, but it can have some far reaching implications if it is extended to purchasing from customers of customers of customers of customers of customers of customers.

During the past few years reciprocal purchasing has been played in reverse— "I'll let you have something if you will let me have something." It became an acute problem in many plants and the sales departments resisted the attempt to divert, their allocations in every possible way.

One company reported that they had to forget any sales allocations of finished goods to many of their

regular accounts because, in order to get certain materials and parts, practically the entire output was sold on a reciprocity basis to suppliers. The sales department was practically eliminated because the purchasing department in order to keep a supply of material coming into the plant had to distribute the greater part of the output.

Reciprocal Buying

Now this company's sales problem is becoming more competitive and the sales department has called on the purchasing department for help through the use of reciprocal buying. This company is faced with the problem of whether the sales department can or should depend on their own ability to create a market or should receive the assistance of the purchasing department to influence certain accounts.

Perhaps in this individual case the sales department is justified in their request for assistance because they lost some of their former accounts due to the reciprocity engaged in during the war. On the other hand,

should the purchasing department be penalized now because they resorted to reciprocity as a means of keeping the plant operating during the short-

Top management is probably the best qualified to settle this policy problem. But before a final decision is made, the purchasing department should present its case adequately so that it won't get caught short when a comparative cost analysis is made.

It may be advisable from a management standpoint to accept some business even though the cost of production is increased on that particular order. By increasing volume, the fixed charges of overhead may be more widely spread and thus reduced. When considering extra business on this basis, it may be the best thing for the good of the company if it is to maintain production at a high level.

When such a policy is adopted, the purchasing department would do well to have this factor taken into consideration when management receives its report on operation. Part of the cost of obtaining this material which is charged to the purchasing depart-

ment through higher costs should be

charged against sales.

Sales departments argue against such a move because they say that if this is to be charged against sales there are countless other expenses around the plant that should be charged to the sales department expense. Anything that could in the least possible way be construed as contributing to the success of the sales department - down to the very design of the product - should be charged against sales if management decides to charge the higher purchasing costs to their operation.

Problems that Arise

Another problem that presents itself to the purchasing department when top management establishes a policy on reciprocity is placing orders with companies in which some of the executives have a financial interest. In one company one of the major executives holds a large financial interest in a supplying company and practically demands that the purchasing agent make "reciprocity" purchases with them.

When this happens, the purchasing department should take a definite stand on the question and act only on written instructions from the executive. In the aforementioned company the purchasing agent has definite written instructions and a specific policy has been established as it relates to this one supplier.

In some cases internal friction may result in establishing a definite policy on reciprocal purchasing. It may be the result of a sales manager who considers reciprocity his strongest selling tool. It may be a top executive who wants to keep production up or has a financial interest in another company that can supply the necessary material. Or the friction may be caused by an uncooperative pur-

chasing agent.

Complete cooperation of the entire organization is essential if the firm engages in reciprocal purchasing. Values should be considered carefully from all sides - management, sales, production, and purchasing. Then if it is decided to embark on a reciprocal purchasing policy, it should become a part of the company's general policy. If this is the case there are several points that should be carefully considered.

1. Don't let it be a matter of senti-

Perhaps it goes without saying that progressive purchasing departments will not consider adopting a reciprocity policy unless quality, ser-

vice, and price are equal. In a few reported cases the various suppliers were not equal on all of these points, but the idea of reciprocity out-weighed one of the other weak points. Unless the important factors are substantially the same, a reciprocity buying arrangement cannot result in satisfactory operation of the purchasing department.

2. Don't let it extend too far.

Placing purchase orders with customers of customers of customers of customers may be carrying a good thing too far. When it extends this far the implications are apt to prove too complicated for the benefits received by the purchasing agent's firm. If it is carried beyond the first customer stage there is nothing to stop it from being extended on and on. In some cases during the war this was forced on the purchasing agent to get vital supplies, but now most of those shortages are far less stringent and a "close to the belt" policy on reciprocity is the most practical for all concerned.

3. Don't let the sales department

dictate the policy.

There was a time in business organization thinking that the sales department was regarded as performing a more vital function than the purchasing department. Now the trend is to give credit where credit is due, and the purchasing department is coming in for its share of recognition. If the purchasing agent is forced to follow the dictates of the sales department he cannot be expected to do his best job of purchasing. It should be the job of the purchasing department to buy the materials at a price and of a quality that will enable the sales department to be completely competitive in the market.

Sales on Merit

If the purchasing department is not hamstrung in its operations by the sales department it can do this job. Then it rests on the sales department to prove its worth by selling the finished goods on their merits rather than because the producing company can place some valuable orders with the prospect.

4. Don't let it be used as a threat.

When the threat of mandatory reciprocal purchasing is made, the purchasing agent would do well to investigate all of the effects of such a threat. In some industries it is a practice to issue purchase orders that say in effect: "Hoomalemale — if you accept this purchase order you must place a comparable volume of business with our firm." If this is

the general practice of the industry there may not be anything the purchasing agent can do about it, but if it is just a threat used to obtain business by suppliers than it should be

When suppliers use such a threat there is always the possibility that they will not be on their toes to keep their product up to standard because they are assured of a certain sale to the company. They may pass off inferior merchandise or seconds and will not make the more recent improvements if they are not forced into it by competition.

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Results of Threats

A threat that is accepted by the purchasing agent will usually bring about similar threats by other suppliers in the field, and before long every order placed by suppliers will carry the "Hoomalemale" rider. When such a situation develops the threats will have to take on something else and the results may be

5. Keep reciprocity on a fair basis. Even though reciprocal purchasing has been the object of many pointed comments, it is operated on a fair and equal basis by most companies. It is used merely as a friendly gesture by the purchasing agent in appreciation for past favors rendered. There are no riders attached, but it is just a means used to develop good will among suppliers and customers.

As long as the practice is kept on a reasonable basis no harm will be done, and many valuable sources and customers can be developed in this manner. If the quality, service, and price are the same with or without reciprocity, there should be no need to shy away from its practice. It will be just another tool to cement relations a little firmer and build vendor and customer good will.

By keeping these points in mind when discussing a policy on reciprocity, purchasing departments will be exercising their just right for a fair hearing on matters affecting them and their operations. If the purchasing agent is to be forced into entangling agreements by the sales department or top management, he should be prepared to suffer the consequences, which may be higher prices, lower quality, or poorer service.

When the Hawaiian translation of the term is used it is on a friendly basis . . . but if it starts out that way and then moves to a demand and later to a threat, the purchasing agent may find that he has a gun in his

ribs rather than a feather.

Who Owns Plant Equipment?

few days ago I received an un-A tew days ago i received a purchasing usual inquiry from a purchasing agent. The answer will interest all readers. This letter read: "At present our company is in a law suit which will mean a financial loss of several thousand dollars if our lawyers fail to win the suit. About 20 years ago our company leased a building for 10 years, with the privilege of renewing the lease another 10 years. A clause in the lease contract states that at the termination of the lease our company may remove from the building all improvements, equipment, etc. installed during the occupancy, or the building owner may purchase it at 75% of the cost.

"Now that the lease is near termination, the holder of a mortgage who loaned money *last year* to the owner of the building has refused to allow us to dismantle and remove many items of equipment which we installed in the building. Also, he has refused to pay us any money for

same.

"The equipment our company installed during the past 20 years includes heating equipment, air conditioning, fans, new stairways, boilers, a printing plant, etc. etc. The sellers of some of this equipment hold mortgages or conditional contracts to secure the unpaid balance we owe. And some of the equipment has been fully paid for by our company. Will appreciate your listing cases that will assist our lawyers to win this suit."

Apparently the answer to this reader's problem involves numerous legal complications and technicalities. However, we shall review late and leading higher court decisions which will positively and clearly answer each and every question presented by

this reader.

Status of Lien

First, we shall briefly review the law on liens created by chattel mortgages and conditional contracts of sale. It is true, of course, that both conditional contracts of sale and chattel mortgages properly recorded in any county in any state in the United States are valid and effective in all states in the whole United States. On the other hand, an unrecorded conditional contract of sale or mortgage is valid with respect only to persons who have knowledge of it.

When a purchaser installs equipment or improvements in a leased building, the matter of title immediately arises, as to whether such improvements belong to the landlord or the buyer. Or when you purchase a building, what part of such equipment is included in your purchase?

By Leo T. Parker

For instance, in Roesch v. Mark, 35 Atl. (2d) 774, a tenant purchased a certain equipment including a show case under a conditional contract of sale which the seller failed to record. Later the landlord contended that he became the legal owner of the equipment because it was installed in his building and, also, because the conditional contract of sale was not recorded.

However, the seller proved first that the show case was not permanently attached to the building; and, second, that the landlord knew the tenant had purchased the equipment under a conditional contract of sale. Therefore, the higher court held that this "knowledge" was equivalent to legally recording the contract. Hence, the court held that the owner of the building was not legal owner of the equipment. This court said:

"The show case was installed under a written agreement which admittedly effected a conditional sale. . . . The testimony was sufficient to establish the fact that, although the conditional sales agreement was not filed, the landlord had actual knowledge."

So, therefore, without going into great details it is practical to assume that either a chattel mortgage or conditional contract of sale held by a seller, who sold equipment to a tenant, not permanently attached to the building, is valid if it was properly recorded in the county where the equipment is situated, or if the one who claims ownership had knowledge of the lien. This law, however, is not always applicable to equipment and devices installed permanently in a building.

According to a recent higher court, a tenant who installs complicated machinery or equipment in a building may remove it in accordance with a landlord's agreement although the building may be considerably damaged during the removal operations.

In Woods, 106 Pac. 730, it was shown that a tenant constructed a brick vault and installed a safe in the vault, by permission of the owner of

the building.

The higher court held that when the tenant's lease expired he could tear the vault in pieces and remove it, and the safe, from the building if he replastered the walls and left them exactly as they were when he leased the building.



For comparison, see Smith, 121 Ala. 335. Here a lease contract contained a clause that at termination of the lease the tenant could remove from the premises all equipment, improvements and devices he had installed during occupancy. The higher court held that the tenant could remove a vault he had installed although he found it necessary to use pickaxes and chisels to cut away partitions and the vault.

And again in Merchants, 167 Ill. App. 315, the higher court held that a tenant could remove from a leased building safety deposit boxes that weighed 40,000 pounds. In this case there was no contract which authorized the tenant to remove the boxes. But the testimony showed that the boxes could be removed without damage to the building. The court held that the tenant could remove them, because the latter had not contracted that the landlord could keep them after termination of the lease. This court also explained that a clause in a lease contract is valid by which the tenant agrees to not remove improvements, or by which the landlord agrees to allow the tenant to remove

Legal Fixtures

Modern higher courts consistently hold that "legal fixtures" cannot be removed from a rented building unless the owner agreed to allow the owner of the fixtures to remove them.

See D Charette's Guardian v. Bank of Shelbyville. 291 S. W. 1054, where the higher court held that an engine is a "chattel" and does not become a legal fixture in a building if it may be removed without injury or damage to the building. In this case the owner of the building contended that he had not agreed to permit the tenant to remove the engine from the premises and therefore the tenant could not remove it. However, since it was not permanently affixed to the real property the higher court held that it could be removed. This court said:

"In determining whether fixtures are in law immovable or not, there are, as the parties to this appeal agree, three general tests: first, annexation to the realty, either actual or constructive; secondly, adaptation or application to the use or purpose to which that part of the realty to which it is connected is appropriated; thirdly, intention to make the article a permanent accession to the freehold."



For comparison, see Reno Electrical Works v. Ward, 274 Pac. 196. Here it was disclosed that a purchaser of twenty electric fans attached them to the walls of a leased building by

brackets. Litigation developed when the landlord objected to removal of the fans because the brackets were nailed and screwed to the walls. However, the court held that fans attached in this manner to a building are not legal fixtures, saying:

"It is true the insulating material was secured to the walls of the building by screws and nails, but not so secured as that the fans and materials can not be removed without injury to the insulation, and also the build-

Variations of Law

Up to this point readers know these facts: First, both chattel mortgages and conditional contracts of sale when properly recorded in a single county are valid and effective in all counties in all states in the United States; second, any chattel or personal property not permanently attached to a leased building can be removed at any time by the purchaser; third, a chattel attached permanently to a building can be removed by the purchaser, if the lease contract contains a clause giving the purchaser this privilege and, further, the building owner does not sell nor mortgage it.

This is the general law applicable to a purchaser of equipment and the owner of a building. However, it is not the law if a new purchaser of the building, or one who forecloses a mortgage, or one having a mechanic's lien, was not informed of a special agreement between the purchaser and the original owner of the building which gave the purchaser the privilege of removing the equipment. Under these circumstances the purchaser loses his right to remove his legal fixtures from the building.

The latest higher court decision involving this important point of law is First Nat. Bank v. Nativi, 49 Atl. (2d) 760, reported March, 1947. The testimony in this case showed that one Booth conducted a business on his own property. Compressor and motors were used to furnish air and electric power for the business. Booth mortgaged his real property to a bank and later purchased an air compressor and two motors which were installed in the main building. Cement bases were constructed on which to place the compressor and the motors in order to lessen vibration.

After installation of this new equipment the bank contended that Booth could not remove the equipment from the building. The bank's contention was that although the equipment was not on the property

when its mortgage was signed, yet the equipment is a "legal fixture" which belongs to the real property. This contention was vigorously denied by Booth and a law suit resulted, but the higher court held that this equipment belonged to the bank although it was not on the premises when Booth mortgaged the real property to the bank.



This court held further that where a building, real property, or premises are specially adapted to certain uses. all machinery attached thereto which is essential to the purpose to which the building is devoted belongs to the building and real property because it is a legal fixture.

A review of late and leading higher court decisions discloses that the test whether machinery, equipment or other merchandise is a legal fixture involves three elements: (1) The annexation of the equipment, whether actual or constructive; (2) its adaptation to the use of the realty to which it is annexed, and (3) the intention with which the annexation has been made, whether or not to make it a permanent accession to the freehold.

The determination of who owns the equipment does not rest upon any one of these elements alone, but upon a consideration of all of them together. The present day tendency is to regard the manner of annexation taken by itself as of relatively small significance, and to give much weight to the adaptation of the device to the use of the realty.

No Notice

In Farrell, 61 Ga. App. 18, it was shown that one Farrell purchased a building without any notice or knowledge that the seller of the building had purchased under a conditional contract certain heating equipment and permanently attached it to the building.

The higher court held that the purchaser of the building had full ownership to the heating equipment without paying the seller who held a lien on the equipment for the unpaid

balance.

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For comparison, see Brown, 1 N.Y.S. (2d) 754. Here a purchaser of a building had notice that certain heating equipment was unpaid for and that the seller held a chattel mortgage to secure payment for the balance due. The higher court held that since the purchaser of the building knew that the equipment was mortgaged he must either pay the balance due or allow the seller and holder of the mortgage to remove it from the building.

Own Weight

Recently a higher court held that all equipment, machines, or devices not permanently fixed to a building, and held to the floor by its own weight are mere chattels, not legal fixtures, and may be removed by its owner from the building.

In Citizens, 216 Ind. 573, it was shown that one White purchased several linotype machines, and erected them in a leased building without attaching them permanently to the building. In fact these machines were held to the floor by their own weight.

In subsequent litigation the higher court held that the purchaser could remove the machines from the building although a new purchaser of the building objected to the removal.



Also, see Day, 194 Atl. 53, where the higher court held that either the purchaser of a portable boiler or the seller, who held a lien on the boiler, could remove it from the building although one Day loaned money on the building believing that his mortgage covered the real premises and all equipment on the premises.

And again see Sunshine, 122 N.J. Esq. 381. Here one Meala loaned a considerable sum of money and for security took a mortgage on a building and land. This mortgage contained a clause that the mortgage covered the building, land and "all boilers, pumps, motors, fans and other machinery" on the premises. In other words, the owner of the real property guaranteed to the one who loaned him the money that the executed mortgage was a lien not only

on the building and land but also on all chattels, legal fixtures, etc. in the building and on the premises.

In subsequent litigation the higher court held that a tenant who had purchased machinery and installed it in the building could remove it when he desired to do so, although it was very heavy and a door frame had to be altered to remove it from the building. This court said that a seller or mortgagor of a building cannot possess another's chattels on the premises, unless the testimony shows conclusively that such chattels are permanently attached to the real property and cannot be removed without considerable alteration or damage to the building.

For further comparison, see Wedge, 136 Me. 189. Here a lessee purchased and bolted a planing mill to a floor in the leased building. Also, the lessee connected the planing mill to a blower, and integrated it with the building by means of belts, shafting, pulleys, and the like.

The higher court held that the purchaser could not remove the planing mill from the building unless he purchased the building. Hence, either the present owner of the real premises, or one who may hold a mortgage on the real property, or a new purchaser of the building, may have full ownership to the planing mill.

Brief Review

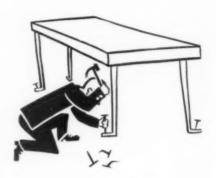
Therefore, it is quite apparent that in order to avoid litigation, both buyers and sellers of equipment should determine, before installing such equipment in a building, whether the method of attachment results in the equipment being a legal fixture, notwithstanding agreements between the present owner of the building and the tenant. This is so because if equipment is installed in a building and is not adapped to be removed and installed in another building, the equipment always is a trade fixture and cannot be removed by either a seller or purchaser. The same law is applicable to equipment which is installed in a building in such a manner that its removal necessitates permanent damage to the building.

On the other hand, where machinery or equipment is installed in a building without any intention on the part of either the seller, purchaser, or building owner of making it a permanent accession to the building, and its removal will not permanently damage the premises, the equipment always is personal property and may be removed from the building not-

withstanding objection of a new owner of the building.

In order that readers may have specific references as to whether machinery and equipment is a legal fixture we shall review several late and leading higher court cases on the subject.

In Anderson, 190 A. 747, it was shown that certain machinery was attached permanently to a building, and parts of it could not be removed without permanently damaging the building. Other parts were not permanently attached.



The court refused to permit the owner of the equipment to remove any of the temporarily attached parts which would interfere with efficient operation of those parts of the machinery permanently attached to the

In Dudley v. Hurst, 67 Md. 44, the question arose whether machinery used in the operation of a factory was a "legal fixture", as to a purchaser of the building at a mortgage foreclos-

The court held that since the principal part of the machinery could not be removed without serious injury to the building, none of the smaller or larger parts of the equipment could be removed.

In Thomsen v. Cullen, 196 Wis. 581, it was disclosed that flasks were used in the operation of a foundry. Although these flasks were not attached in any way to the buildings, the court held the flasks to be legal fixtures, which could not be removed, because the flasks were used in connection with the principal parts of the machinery that were permanently attached to the building.

And, in another case, Frost v. Schinkel, 121 Nebr. 784, the purchaser of a factory building at a foreclosure sale claimed that legal title to certain equipment passed to him. The court decided that a 1,400 pound lathe not attached to the building was a part of the realty because it was absolutely necessary to the operation

(Please turn to page 302)



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VEST pocket dial indicator gage offers a handy means of measuring and comparing thicknesses of paper, leather, rubber, sheet metal, wire, plastics, etc. Designed to fit into the curve of thumb and index finger, it

has a large dial graduated to read in thousandths of an inch. A small "tell tale" hand counts revolutions of the larger hand up to the maximum range of \$\mathbb{Y}_8\$ inch. Crystal is non-breakable. Decimal equivalents of fractions are shown on the back of the gage. The L. S. Starrett Company, Athol, Mass.

MATERIAL REMOVES PAINT FROM METAL COMPOSITION 15 is a cold solvent material for removing baking japans, wrinkle finishes, nitrocellulose lacquers

and synthetics such as alkyds, phenolics, ureas, vinyls, etc., from such metals as steel, galvanized iron, die castings, aluminum, copper and brass, with no attack on the metal. It may be applied by tank immersion method or by swabbing or brushing. Oakite Products, Inc., 154 Thames St., New York 6, N. Y.

STEEL GATE VALVES



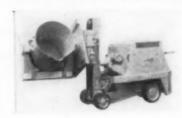
UNION bonnet 600-lb cast-steel gate valves, designated No. 3602XW and 3602X, replacing 3606XW and 3606X, are available in sizes 1/4" through 2", with screwed ends and with two kinds of trim. The XW

valves are recommended for superheated or saturated steam, water, air, fuel oil, non-low-viscosity oil, butane, propane, non-lubricating fluids, etc. The X valves are recommended for oil and oil vapor at temperatures up to 1000° F. Crane Company, 836 S. Michigan Ave., Chicago 5, Ill.

HIGH-PRODUCTION GRINDING BELT RESINALL Metalite is a heat-resistant dry grinding belt, tests of which are said to have shown pro-

duction increases of 4 to 1 over the regular glue-bond material for high heat-generating operations. The new belt uses thermosetting resin adhesives and is claimed to remain sharper, longer. Literature and free job tests available. Behr-Manning, Troy, N. Y.

ROTOR-LADLE FOR FORK TRUCKS



ATTACHMENT for foundry fork trucks is designed to transport rapidly hot molten metal from cupola to pouring-floor and to pour molten metal without having to remove the ladle from the truck. It has a 360-degree rotor with two speeds, the slower speed giving added control when actually pouring the metal. The truck used in this application is an end control fork model, which can be employed for regular metal industry jobs when not being used in pouring operations. Ladle has 4150-lb. capacity. Yale & Towne Mfg. Co., 4554 Tacony St., Philadelphia 24, Pa.

MINERAL COATED NON-SLIP SURFACING "SAFETY WALK" is a non-slip surfacing for indoor and outdoor application. It consists of extremely hard min-

eral grains surface-coated to a heavy, tough, treated fabric. It is said to be easily applied, long wearing, weatherproof, and waterproof. It will not crack and is unaffected by grease, gasoline, oils, or normal extremes of heat or cold. Available in four standard colors, red, green, silver, and patural (black). Natural is also available in fine and coarse grades. Minnesota Mining and Mfg. Co., Saint Paul 6, Minn.

PYROMETER CONTROLLER

ELECTRONIC pyrometer controller proportions the current input to electrically-heated furnaces, ovens, plastic molding machines, salt pots, and similar equipment to provide practically



straight-line temperature control. The instrument, Model IE486, does this by time modulation of the input energy. Bulletin PB1237 available. The Bristol Company, Waterbury 91, Conn.

WATER
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INSULATION

ELECTRICAL wire with rubber insulation that improves when soaked in water is designed for use underground and

in wet locations where high moisture resistance gives it longer life and increased safety. Wire's durability is due to coating of high purity natural rubber latex applied by the dip process. It is marketed under the name "Laytex RUW". United States Rubber Co., Rockefeller Center, New York, N. Y.

GEAR GAGE

STAINLESS steel gear gage is now available with 20° pressure angle full length tooth form 3-4-5-6-8-10-12-16-20-24-32-48 and stub tooth forms 3/4-4/5-5/7 - 6/8 - 8/10 - 10/12-12/14-16/21-20/26-24/32-32/42-



48/64. Illustration shows how the gear gage eliminates the tedious calculation and computation to determine the pitch of gear with unknown pitch. By rolling the gage over the teeth of a gear one can tell the pitch without chance of error it is claimed. George Scherr Company, 200 Lafayette St., New York 12, N. Y.

(Please turn to page 148)



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WOUND-ROTOR INDUCTION MOTOR ALLOY FOR



LIFE-LINE wound-rotor induction motor of open drip-proof construction is available in ratings of 1 to 15 hp (Frames 203 through 326). The frame is rolled from steel plate and the feet are pressed steel. The pulley end bracket is pressed steel and the front end bracket closegrained gray cast iron. Self-sealed, prelubricated ball bearings have a special lubricant sealed-in at the factory. These Type CWP motors may be used wherever adjustable speed is required or where high-starting torque with low-starting current is necessary. Westinghouse Electric Corp., P.O. Box 868, Pittsburgh 30, Pa.

MATTRESS BAG WITH SELF-SEAL CLOSURE THREE-PLY mattress bag with a selfseal closing feature which eliminates tape sealing is made of heavy kraft paper

and meets all requirements of the national railroad and trucking associations, maker states. It is said to offer maximum protection against rigors of handling and shipping, more efficient closing operation, and positive closure that will withstand aging and will stick under all conditions. No heat, clamps, tape or other devices are necessary for sealing. Bemis Bro. Bag Co., St. Louis 2, Mo.

POLISHING AND FINISHING MACHINE



THIS machine is useful for hand tooling, polishing the heads of screws, removing cut-off teats, and all burring operations necessary in connection with parts produced on automatic screw machines. Work can be performed on it at rapid production rates. Operator can either sit or stand at work. Three spindle speeds—4500, 3280 and 2380 rpm—driven from ½ hp motor are suitable for the different materials from which parts may be produced. Literature available. Brown & Sharpe Mfg. Co., Providence, R. I.

ALLOY FOR HIGH SPEED PLANER TOOLS

SINTERED carbide alloy, designed for high speed planer tools, is available under the trade name Carmet

Grade CA-51, and the blanks can be supplied for planers using either the "clamped in" or brazed type blanks. Other applications include blanks for heavy turning, boring and facing tools, as well as similar operations where an exceptionally strong carbide is required. Carbide Alloys Division, Allegheny Ludlum Steel Corporation, Ferndale, Mich.

PORTABLE MAGNETOMETER



ILLUSTRATION shows one of three models of portable magnetometer which will uncover and measure residual magnetism, and show where and how much demagnetizing has to be done to neutralize it. Models are adapted for specific jobs, and consist of a pickup unit and an indicator. One model is used for materials inspection, to measure the amount of residual magnetism in steel parts or assemblies, one for precision analysis of magnetic fields in aircraft, and one for use where a magnetic compass is installed. Literature available. Thomas E. Smith, 122 E. 42nd St., New York 17, N. Y.

COATED ARC WELDING ELECTRODE LOW - HYDRO-GEN type coated electrode which is said to prevent under-bead cracking in weld deposits

is known as Airco No. 394. It is said to be one of the few of its type which operates on either a-c- or d-c- and is designed to give welds of 100,000 psi. It can be used in the fabrication of hardenable steels which are susceptible to under-bead cracking when conventional types of electrodes are used without preheat. Air Reduction Sales Company, 60 East 42nd St., New York 17, N. Y.

MULTI-PURPOSE GREASE



VALVOLINE X-5, multi-purpose grease is described as a general lubricant that decreases time between applications, cuts grease consumption and errors. It is said to last longer and assure positive protection for equipment

wherever heat and water offer difficulties to conventional greases. It does not combine with water and is water-resistant. It stays together and does not thin or drip from bearings. Freedom-Valvoline Oil Company, Freedom, Pa.

ABRASIVE CUTTING MACHINE



MODEL 223 bar cutter is a hand operated wet abrasive cutting machine designed for fast, high quality cuts on practically all types of materials up to 2" diameter solid stock and 3½" diameter tubing. The machine features a 5" wheel flange, wheel guides, automatic work stop, automatic coolant pump operation, automatic hydraulic work clamp. A completely separate, wheel mounted coolant tank is also featured. All interior parts of the machine are cadmium plated. Andrew C. Campbell Dirn., American Chain & Cable Co., Inc., Bridgeport, Conn.

VIALS MADE OF LUSTRON PLASTIC TRANSPARENT vials of Lustron, a polystyrene plastic, come in gemlike colors and are said to offer rigid-

ity and greater durability than glass containers. Labels may be molded-in in the original operation. The vials, about 70% lighter than glass, range in sizes from 3%" to 13/4" in diameter and from 13/4" to 65%" long. All inside walls are smooth even where the outside walls are threaded. Supplied with plug-type, friction cap, or screw-type closures. Celluplastic Corp., 52 Avenue L, Newark. N. I.

LOW-LIFT PLATFORM AND CRANE



POWER industrial truck shown above combines a low-lift platform and a crane. The crane can pick up a load from floor level and lift it to a hook height of 8', within a radius of 45 degrees either left or right from base. The truck's platform can lift and transport loads weighing up to 3 to 5 tons, depending on size and model. Loads may be piled directly on truck's platform or on skids under which the platform can maneuver after loading. Elwell-Parker Electric Co., 4519 St. Clair Avenue, Cleveland 14, O.

(Please turn to page 150)



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WINDOW AND FLOOR SQUEEGEES

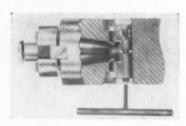


ILLUSTRATION at top shows new squeegee for windows which features a durable brass holder which is adjustable to meet any wiping situation. Blade can be easily removed from or inserted into brass channel without loosening bolts. Provided in 12, 14 and 18-inch lengths. Bottom picture shows new floor squeegee with four working edges, obtained by reversing handle on either side. Each of double edges is V-shaped. Manufactured in 18 and 24-inch lengths. Literature available. Fuller Brush Company, Industrial Division, Hartford, Conn.

"FEATHER-WEIGHT" BUILDING AGGREGATE RAW perlite, a glasseous, volcanic rock, is pulverized and heat-treated to form a building aggregate that is pure white

and weighs only 3 to 12 lbs. per cu. ft. Bricks formed from it are said to be light enough to float in water when water-proofed. Concrete blocks of perlite aggregate weigh only about ½ the standard block and have an insulating value of approximately 20 times the latter, according to the manufacturer. Perlite Manufacturing Company of Carnegie, Carnegie, Pa.

QUICK CHANGE SPINDLE



POSITIVE means of both seating and ejecting shank type cutters, arbors and adaptors without resorting to draw keys and drifts is said to be available with this quick change horizontal boring machine spindle. The spindle is provided with a steep or fast taper socket and a simplebuilt-in double acting screw locking device. This is said to enable the operator to rapidly mount cutting tools by merely inserting the shank into the spindle opening, or socket. Seating or drawing is accomplished by tightening the lock's single screw. To eject the cutting tool assembly, the lock screw is turned in the opposite direction. Giddings & Lewis Machine Tool Co., Fond du Lac, Wis.

METAL STITCHER WITH HEAVY FRAME

S-13-C Bostitch metal stitcher is equipped with a heavy frame for added sturdiness, and a new solenoid con-

trol, adjustable for single or continuous operation. The electrically operated footswitch solenoid gives added speed and safety. The machine is used for stitching steel, aluminum, or other metals, metal to metal, or to other materials. It occupies 16" x 40" floor space and has a ½ hp motor, v-belt drive. Bostitch, Inc., 379 Mechanic St., Westerly, R. I.

FLOOR EDGER



COMPACT floor edger is equipped with electric headlight and is designed to give operator complete visibility. The machine weighs 35 lbs. and is equipped with ball casters which will not mar the floor. The casters are adjustable so they can be placed close to machine and used on steps. Because of the position of the bag, dust, grit and grime are not carried through the motor. Red Devil Tools, 130 Coit Street, Irvington, N. J.

SILICATED TRAFFIC MARKING PAINT

NEW traffic marking paint heavily based with fine silica is said to be many times as durable and resistant to contin-

ual cleaning as ord nary traffic paint. It is for industrial marking off of safety, storage, and traffic areas and can be applied with brush or line markers. The paint is non-slippery. The Wilbur & Williams Co., Greenleaf and Leon Sts., Boston 15, Mass.

WELDING HAND SHIELD

LIGHTWEIGHT, seamless welding hand shield is recommended on operations where a welding helmet is not practical and on tack welding and set-up work. The shield is made in one piece from



special fibre. The steel welding glass holder is insulated and rivetless. The fibre handle is $5\frac{1}{2}$ " long, and is riveted to the body. Available with standard Noviweld or Filterweld glass plates. W thout glass the entire shield weighs 11 ounces. American Optical Co., Southbridge, Mass.

2000-LB SHOP CRANE



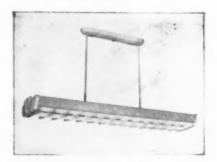
HYDRO-LIFT shop crane, with a 2000-lb capacity is suitable for use in machine shops, garages, industrial plants and foundries. The 45" boom is said to make installing equipment or moving shop equipment easy. If greater boom length is desired, an 18" extension arm may be attached. Double action hydraulic pump converts every movement of pump handle into lift motion. Placing towing handle in upright position automatically sets brake. Cardinal Corporation, St. Paul, Minn.

NEW DIAL SCALE MECHANISM

MAGNETROL, a basically new dial scale mechanism, is said to achieve: (1) a straight line relationship between

the platform load and pointer movement without specially filed cams, adaptations to prevent backlash, (2) a reduction of service adjustments from the usual 6 or 7 to only 2, and (3) full but light engagement between the pointer rack and pinion by means of a permanent magnet. All moving parts are mounted at 3 fixed centers in a single gray iron casting. Literature available. The Vale & Towne Mfg. Co., 4530 Tacony St., Philadelphia 24, Pa.

4-LAMP FLUORESCENT LUMINAIRE



TYPE CD-160 four-lamp fluorescent luminaire for schools, offices, etc., is made for higher illumination levels than can be obtained practically from two-lamp units. The luminaire is available for suspension mounting as a direct-indirect type with steel louvered bottom, or as a semi-indirect type with translucent plastic bottom of polystyrene extrusion for strength and rigidity. Semi-direct distribution can be obtained by mounting the unit with louver bottom on ceiling brackets. Westinghouse Electric Corp., P.O. Box 868, Pittsburgh 30, Pa.

(Please turn to page 152)

For the first time ever! YOU CAN GET ALL THE G-E FLUORESCENT LAMPS YOU WANT!



GELAMPS
GENERAL ELECTRIC

No need to wait any longer! Now you can get all the G-E fluorescent lamps that customers everywhere want!

NOW'S THE TIME for your customers to fill those empty sockets, replace blackened, burned out tubes, and go ahead with plans for lighting modernization.

FOR THE FIRST TIME since General Electric introduced this sensational new light source ten years ago, production has at last caught up with the tremendous demand.

NEW FACTORIES now in operation are turning out G-E fluorescent lamps by the millions—all manufactured to those high standards of quality that have made G-E the first choice of buyers everywhere.

TODAY! It pays to sell the lamps that most people want—the lamps that bear this mark of quality...





Be Safe . . . Be Sure . . . Use SOL-SPEEDI-DRI

People who use Sol-Speedi-Dri—industry's original and foremost absorbent for all liquids—have learned that they can count on the uniformly high quality of Sol-Speedi-Dri. They have learned, too, that Sol-Speedi-Dri costs less because it does more work . . . because it is always efficient, always dependable.

Yes, it's quality all the way with Set-Speedi-Dri . . . quality that

assures you cleaner, brighter, safer floors . . . freedom from slips and falls caused by dangerous, slippery surfaces. Obtained by selective mining, laboratory-checked hourly, and processed by the most modern methods and equipment, Sol-Speedi-Dri comes to you in special weather-proof bags, every pound at peak efficiency. Remember the name . . . Sol-Speedi-Dri!

WHEN YOU BUY, BE SURE IT'S SOL-SPEEDI-DRI!

Safety and Maintenance Co., Inc., No. 1 Wall St., New York 5, N.Y.

of the United S	FREE SAMPLE FILL OUT THE COUPON AND MAIL TODAY FOR BIG, FREE SAMPLE	
	Name	
	SOL-SPEEDI-DRI ABSORBENT FOR ALL LIQUIDS	

MOTORS AND GENERATORS



GENERAL purpose "Tri-Clad" high speed synchronous motors and generators in "900 Series" Frame have been announced. The motors are available in standard ratings from 20-hp to 1,000-hp at 60 cycle speeds of 514 to 1800 rpm, in either two-phase or three-phase types. Generators are available in ratings from 12½ to 1250 KVA. The motors are of drip-proof construction. Direct-connected and belt-driven exciters are available. General Electric Co., Schenectady, N. Y.

CORRUGATED TOTE BOXES



LOW COST, light weight, strength, durability and resistance are described as chief features of chemically hardened corrugated board tote boxes. Said to weigh 50% to 60% less than steel tote boxes, of like cubic capacity, they can be used for both production and inventory service. They are extra thick at points of stress, acid and water resistant, and are not affected by cutting oils. Special sizes made to suit particular needs. Convoy, Inc., Canton 7, O.

15-FOOT PORTABLE BOOSTER



EACH end of this 15-foot portable booster can be raised and lowered by positive hand wheel. The unit is built with 24" wide, 3 ply solid woven cotton duck belt, and floor locks so that machine will not move when placed into position. Belt is reversible. Units coupled together will move cartons, boxes, crates, etc. from one part of a plant to another. Sage Equipment Co., 30 Essex St., Buffalo 13, N. Y.

(Please turn to page 156)



These Bolts are covered with grime



These Bolts are loaded with burrs



These Bolts are clean and smooth



Circle ® Bolts and Nuts...both standard and special... are produced by skilled boltmakers with years of experience. This is reflected in the finished appearance as well as the overall quality of these famous products.

BUFFALO BOLT COMPANY

North Tonawanda, N. Y.
SALES OFFICES IN PRINCIPAL CITIES

Export Sales Office: Buffalo International Corp., 50 Church Street, New York City

...they are CIRCLE



A NEW GEM in



INDEPENDENT PNEUMATIC TOOL COMPANY

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PACKAGE OF STALL-PROOF POWER!

... the smallest, lightest, most POWERFUL ½-inch portable electric drill in the world—a statement no other manufacturer can make!



PNEUMATIC TOOLS . UNIVERSAL AND HIGH FREQUENCY ELECTRIC TOOLS . MINING AND CONTRACTORS TOOLS



We'll Design Them for You or Make Them Exactly to Your Specifications

Either way, you'll be assured of precision workmanship — of getting springs that are all ways good — all ways uniform — that fit in as they should in assembly and perform as they should in service.

Where we are allowed to help in the design and engineering, our specialized experience often develops better, simpler ways of meeting spring requirements — substantially reducing costs on many jobs.

Try us and see. Prompt service, large orders or small.

Inquiries Invited



BERKSHIRE 6464 2100 N. MAJOR AYE., CHICAGO 39, ILL.

3-RECEPTACLE RACEWAY



THIRTY-inch metal raceway to provide additional electrical outlets, known as Plugmold, Jr., comes complete with three standard receptacles and 6' cord and plug. Prewired, ready for plugging into an existing outlet, the unit is easily attached to a surface by means of the two wood screws furnished. The Wiremold Company, Hartford 10, Conn.

GENERAL PURPOSE COUNTER



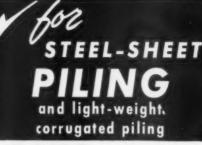
MECHANICALLY operated counter, designated Series 1260, is adaptable to any standard drive. Light gray band up and over the top of the counter gives natural emphasis to the easy-reading line of 6 black figures which stand up in bold contrast. Direct readings supplied by the counter reduce operater fatigue and prevent many errors formerly made with graduated dials. Veeder-Root, Inc., Hartford 2, Conn.

EASILY CLEANED UNIT HEATER



HEAT transfer surfaces of this unit heater have specially designed, rounded contours, simplifying maintenance and making the unit suitable for use in dusty, linty atmospheres, such as textile mills, etc. A jet of air from a compressed air hose or portable electric hand blower will remove lint, fly and dust in a few minutes, maker states. High volume of air provides a partial self-cleaning action which will maintain heater's capacity for long operating periods. Complete clogging is said to be almost impossible. Grinnell Company, Inc., Providence 1, R. I.

(Please turn to page 158)



RAILS and TRACK ACCESSORIES



WRITE FOSTER

1 TON OR 1000

EVERY SINGLE ITEM AS SHIPPED BY FOSTER IS WARRANTED TO BE REPRESENTED . . . AND IS SUBJECT TO PURCHASERS INSPECTION AND APPROVAL AT DESTINATION.

PROMPT SHIPMENTS FROM FIVE WAREHOUSES

PITTSBURGH; CHICAGO; AMSTERDAM, N. Y; DELAWARE, N. J; HOUSTON, TEXAS

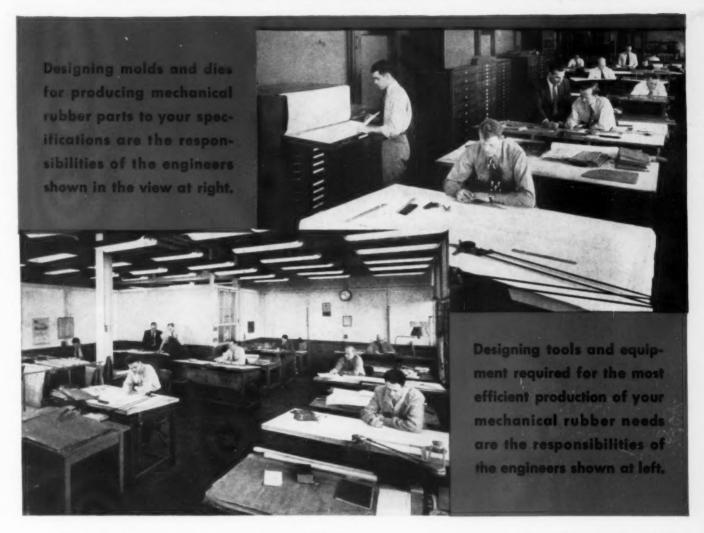
PURCHASERS PLEASE NOTE:

46 years of customer satisfaction are solidly behind Foster Piling, Rails, Track Accessories, Pipe and Wire Rope . . . always sold under the Foster guarantee. Foster's dependable service continues during periods of scarcity. Five strategically located sales offices are ready to serve you.



How to Add Complete Rubber Engineering Facilities to Your Plant

[WITHOUT ONE CENT OF INVESTMENT BY YOUR COMPANY]



■ When you refer your mechanical molded, extruded, or bonded rubber parts requirements to The Ohio Rubber Company it is almost like adding complete rubber engineering facilities to your plant. Our two specialized staffs of engineers are prepared to coordinate their skills with your engineers to attain the most efficient solutions to your problems in rubber. Suggestion: Ask us to have our representative in your area discuss details of YOUR specific requirements.

THE OHIO RUBBER COMPANY

WILLOUGHBY, OHIO

FACTORIES: WILLOUGHBY, OHIO . LONG BEACH, CALIF. . CONNEAUTVILLE, PA.
BRANCH OFFICES: DETROIT . NEW YORK . CHICAGO . INDIANAPOLIS . CLEVELAND . BOSTON

"KEX" Industrial Wiping TOWELS



General View of Diesel Engine Test Shop, Baldwin Locomotive Works, Philadelphia, Pa.

... More Important Every Day to the AMERICAN INDUSTRIAL SCENE

This great Diesel Engine plant is one of many of America's vital industries where KEX Industrial Wiping Towels contribute to greater efficiency of operation.

The reason why KEX Industrial Wiping Towels have won for themselves such an important role is because they have been produced for wiping only. They have no harsh seams... no hidden buttons... no abrasive particles to mar delicate and expensive surfaces.

They come in neat, easily stored bundles that help control distribution—every wiping towel in the lot is thoroughly cleaned and inspected before delivery to you.

Take your cue from industrial leaders who make it their business to keep operating costs down—and efficiency up.



Nothing to Buy-No Expensive Inventory-Just a Low Monthly Rental. The first month should show a decided saving on wiping costs.

For complete information, see your classified Telephone Directory for nearest KEX distributor, or write KEX NATIONAL SERVICE, 295 Fifth Avenue, New York 16, N. Y.

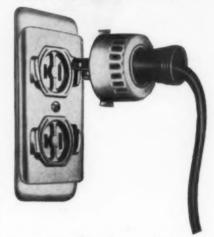
VKEX NATIONAL SERVICE

REPLACEABLE BIT SCREW DRIVER



NO. 88 Tool Holder, replaceable bit screw driver, is for driving both Phillips and slotted head screws. It features a hollow handle compartment which contains two bits for Phillips screws and one for slotted screws. Polished steel bar is hardened and tempered. Screw cap is aluminum. Other bits available to fit holder. Stanley Tools, New Britain, Conn.

PLUG AND WALL PLATE UNIT



TIGHT connections for all electrical outlets in industrial shops and plants is said to be assured by this plug and wall plate unit. The plug, of durable hard rubber, is attached inside a metal holder. Projecting ears on the holder engage under specially formed receiver prongs on the wall plate, and only a quarter turn will lock the connection. The plug cannot be pulled out until turned and released. The unit can be installed over present plates. Lok-Tite Manufacturing Co., 1050 Sherman St., Denver, Colo.

BALL TRANSFER TABLE



ALL types of packages, cartons, etc. with flat bottoms can be handled on this ball transfer table which will handle loads up to 10,000 lbs. Installation of the unit in all types of conveyors permits articles to be removed for inspection or other purposes without interrupting the continuous flow. It is useful where several conveyors or lines are to converge into one. Tables are built to individual requirements and specifications Sage Equipment Co., 30 Essex St., Buffalo 13, N. Y. (Please turn to page 162)



IN STABILIZING PROCESS START-UPS

Hours, even days, have been saved on process start-ups by the simplicity and stability of Model 40 Controller adjustments. A large Texas refinery saved a week. And this is only one of many advantages that account for the phenomenal success of the Model 40 Controller. In less than two years, over 12,000 of these advance-design instruments have been purchased by industry.

No single feature but a combination of features is responsible for the superiority of Model 40. Simplicity of design and construction, engineering ingenuity, highest quality of craftsmanship and materials are all inter-related factors. The Model 40 Controller has been an "eye opener" in every last detail . . . the finest modern controller.

FOXBORO

"THE FINEST MODERN CONTROLLER"



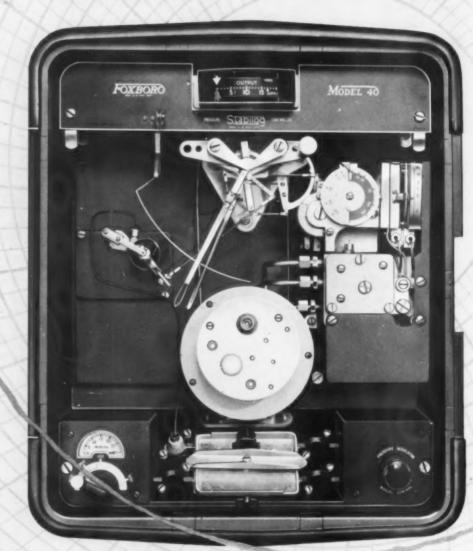


The Model 40 Pneumatic Controller is available for temperature, pressure, flow, liquid level, humidity, density, etc., in a full range of control actions and combinations. Write for Bulletin 381. The Foxbore Company, 262 Neponset Avenue, Foxboro, Mass., U. S. A.

"BUMPLESS" TRANSFERS

NO TRICKY COMPARISONS of gauge readings are necessary with the M-40 easy-to-operate 4-position transfer switch. When making a transfer from manual to automatic operation, the control index is moved until pressure indicated on instrument output gauge floats anywhere between 2 and 14 pounds. Then, without touching the manual control regulator, the transfer switch is moved to automatic position. Simplest system yet devised!

... typical of the many important advantages that make Foxboro's M-40 the finest modern controller.

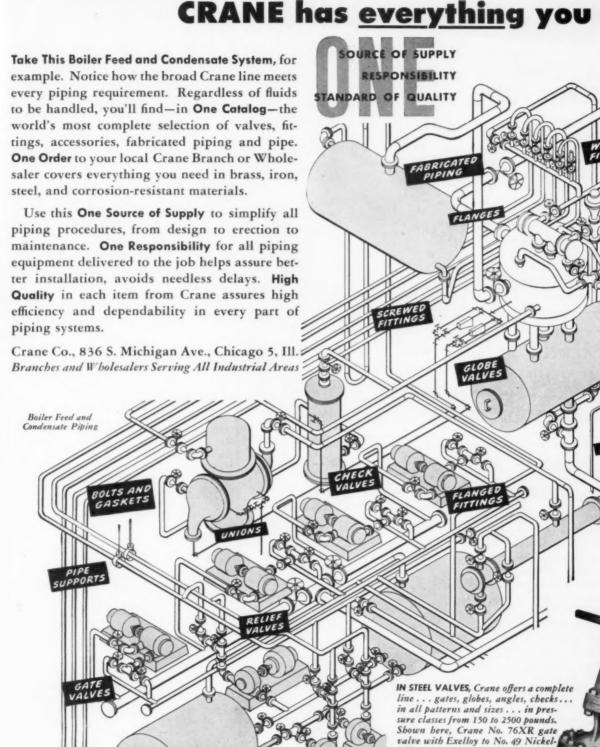


FOXBORO
REG. U. S. PAT. OFF.

11-40

"THE FINEST MODERN CONTROLLER"

If it's <u>anything</u> in piping... CRANE has <u>everything</u> you need



EVERYTHING FROM . . .

VALVES • FITTINGS
PIPE • PLUMBING
AND HEATING

CRANE

FOR EVERY PIPING SYSTEM

Alloy trim, for steam services at 600 pounds up to 850 deg. F. maximum. See your Crane

Catalog.



Is Your Plant as Modern as Your Product?

Step Up Productive Output with TOWMOTOR

Overcome the handicap of obsolete handling methods-let Towmotor Mass Handling help you increase productive output in your plant. Versatile, gasoline-powered Towmotor Fork Lift Trucks and Accessories (Model LT-50 with Revolving Carriage for transfer handling of bulk materials illustrated) provide all the benefits of modern handling techniques for every plant, large or small . . . handling raw materials and finished products of every size, shape and type . . . 24 hours a day.

SEND FOR FREE BOOK!

The Towmotor Fork Lift Truck and Tractor Guide gives complete informative and helpful informa-tion about Towmolor materials handling equip-ment. Send for a free copy. Towmolor Corpora-tion, Division 11, 1226 E. 152nd St., Cleveland





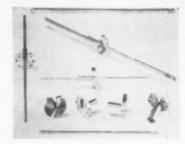
and TRACTORS

M H is Mass Handling

the systematic movement of the most units, in the short est time, at the lowest cost

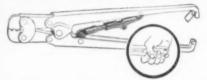
RECEIVING PROCESSING . STORAGE . DISTRIBUTION

KEYWAY BROACHING TOOLS



STANDARD tools for broaching keyways have been designed to be used on short stroke broaching machines in plants where there are many different sizes of holes with many different sizes of keyways, all to be produced in production quantities. With the tools it is possible to make keyways 1/2" wide x 1/4" x 4" long on 20" stroke broaching machines and keyways up to 1" wide x 1/2" deep x 6" long on 36" stroke broaching machines. Literature available. Zagar Tool, Inc., 23880 Lakeland Blvd., Cleveland 23, O.

SOLDERLESS WIRING HAND TOOLS



"CERTI-CRIMP" tools are for wiring applications requiring installation of solderless terminals by manually operated tools. The tools incorporate a simple, effective device that prevents re-opening of the tool for admission of a new terminal until it has been completely closed for a perfect crimp on a previous terminal. This is said to eliminate the possibility of faulty electrical connections resulting from operator fatigue or carelessness. Operation of the tool is unaffected by the device. Catalog 30-F available. Aircraft-Marine Products, Inc., 1575 N. 4th St., Harrisburg, Pa.

CIRCULAR STENCIL ATTACHMENT

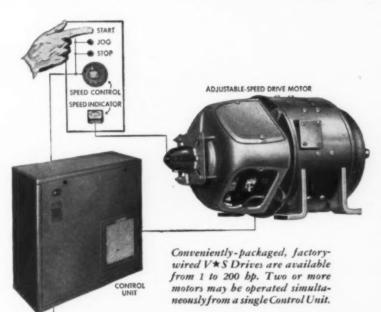


ATTACHMENT for the 1/2" and 7/8" Diagraph-Bradley housed model stencil cutting machines enables the machine user to cut circular stencils for smaller drums, kegs, barrels, cartons, etc., as well as cut stencils in the conventional manner for straight line stenciling. The ½" circular attachment will cut a maximum of 6 lines, and the 3/8" a maximum of 4 lines. Either attachment will cut a circular stencil up to 21" diameter. Diagraph-Bradley Industries, Inc., 3745-55 Forest Park Blvd., St. Louis 8, Mo.

(Please turn to page 164)



. . . in Industry after Industry!



Today, thousands and thousands of Reliance V*S Drives, providing adjustable speeds from A-c. circuits, are helping to increase production and reduce costs in every industry. These completely packaged, all-electric drives have become so popular since they were first introduced ten years ago that there is now no important industry where they are not being profitably employed. If you do not yet have the proved time-saving and cost-cutting advantages of Reliance V*S Drive in your plant, it will pay you to investigate further. Write for new Bulletin 311!

Sales Representatives in Principal Cities

RELIANCE ELECTRIC AND ENGINEERING CO.

1056 IVANHOE ROAD . CLEVELAND 10, OHIO

"Motor-Drive for More Than Power"

FROM A-C. POWER LINE



GLASS PANES must be handled with loving care . . . or glass and the handlers are likely to suffer.

The Columbus (Ohio) Showcase Co. strips glass edges with Bauer & Black Industrial Adhesive Tape No 113. Breakage is reduced . . . injury hazards cut down . . . production speeded up . . . and product improved.

No. 113's long-life adhesive, its thickness and workability make it exactly the right tape for this job. The tape, left in place, forms a cushion for the glass in the frame, gives it a tighter fit and dust seal. Like other Bauer & Black "Specific Tapes for Specific Uses," No. 113 does its job efficiently, saving time and money for the user.

What's the right tape for your job?

Our free catalog will show you how you can save money, speed production or improve what you make with Industrial Adhesive Tape. You'll probably find in it just the tape you need. If necessary and to our mutual advantage, we'll MAKE the tape you want. Write Dept. 9-10 today.

Products of

Division of The Kendall Company, 2500 S. Dearborn St., Chicago 16

Production Short Cuts to Reduce Costs • Research to Speed and Improve Methods

GROMMET INSERTING TOOL



ILLUSTRATION shows tool which is said to simplify the insertion of grommets into panels, chassis, etc. Operator slips nose of tool through the hole to receive the grommet, places grommet into the claw nose, withdraws the tool and the grommet is automatically inserted in position. No preparatory treatment of grommets is necessary. Forcing and jamming methods are eliminated, maker states. Available in 1/4", 5/16", 3/8" and 7/16" sizes. D. B. Rich Mfg. Co., 6217 N. Melvina Ave., Chicago 30. Ill.

GRINDER FOR INDUSTRIAL

FAIRCHILD electric grinder, powered for industrial use, is described as offering vibrationless operation that

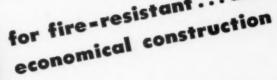
permits precision work without fatigue. Features include: sealed ball bearing at point of greatest load; self aligning vibration-absorbing neoprene coupling; powered by 1/20-hp Fairchild universal type motor; all electrical components checked at 1500 V breakdown for grounds; chuck and shaft fabricated in one piece. child Industries, 110 Main St., Burlington,

PRE-SHARPENED TOOL BIT



ILLUSTRATION shows operation of pre-sharpened shearcutting tool bit, which uses the principle of molecular cleavage. The tool cuts metal with a knife-like action, instead of chiseling it off. It is claimed to save as much as 50% in production time, frequently 70% or more in power consumption, and labor costs. The shearing action is said to make possible depths of cuts up to three times the nominal size of the tool bit used. The tool can be used on copper, brass, bronze, plastics, cast iron, steel, and other ferrous and non-ferrous alloys without changing the original grind. Further information available. Shearcut Tool Co., Box 746, Reseda P. O., Los Angeles, Calif.







You get long-lasting, economical construction when K&M "Century" Apac board is specified for new building, renovations or as a replacement material.

That's because Apac is made of tough asbestos fibers and Portland cement-a hard-wearing combination that resists fire, rodents, termites, rot, rust and weather. And Apac actually improves with age.

"Century" Apac is economical on any job. Initial cost is surprisingly low. Installation costs are low because Apac is easy to cut just score it, and snap off; easy to applyfastens in place with nails or screws; and easy to handle-comes in sheets 4'x 8' and in thicknesses of 3/6", 1/4" and 3/8".

For further information on how "Century" Apac can help solve your special problems, write direct to us. Your inquiry will receive prompt attention.



KEASBE MATTISON COMPANY . AMBLER



SPEEDY, SINGLE NUT CLAMPING

Here is an important new advance in flaring tools . . . a new tool that makes precision S.A.E. flares faster and easier-and makes them without scoring the tubing. Flares the most popular sizes of soft copper, brass and aluminum tubing for making up tight S.A.E. flare joints.



In place of the usual bar it has a die holder with sliding dies for clamping the tubing. Only one thumb screw to tighten-a ball thrust bearing makes it easy to turn.

The extra depth smooth surface dies hold the tubing tightly without scoring. Freedom from scoring is considered by many engineers to be an important advantage in making longer lasting flare joints.

Yoke is made of forged steel; steel dies are heat treated. Tool is extra strong and durable. Ask for full information on this fast working tool and others in the complete Imperial Tubing Tool Line. Write for Folder 347.

No. 300-F Imperial Hi-Duty Flaring Tool. Flares 1/4", 5/16", 3/8", 1/2" and 5/8" O. D. Tubing. Complete in deluxe box. Each....

See Your Industrial Supply House

THE IMPERIAL BRASS MFG. CO. 512 S. Racine Ave., Chicago 7, III.

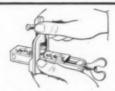
HAS NEW DIE HOLDER WITH SLIDING DIES



1. Simply insert tubing between segments of the proper size die block.



2. Swing cam action clamp into position against end die and tighten thumb screw.



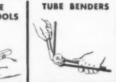
3. Slide yoke over end of die holder into position over tubing to be flared, and turn compressor cone down firmly. The result is a precision 45° flare without scoring the

A few of the many other tools in the complete Imperial Line TUBE













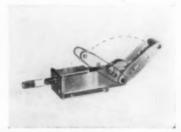
MPERIAL PIONEERS IN TUBE FITTINGS AND TUBE WORKING TOOLS

SOLDERING MACHINE



PRODUCTION soldering machine is said to simplify complicated small hard and soft soldering jobs in the manufacture of small products, instruments, jewelry, etc. Used in the manufacture of record changers to solder wire to lugs on crystal or magnetic pick-ups, the machine is claimed to have speeded up the operation 35 to 40%. Interchangeable simple electrodes are designed for each job. The machine is also used to anneal and harden small parts. Joyal Products, Inc., 12 Grafton Avenue, Newark, N. J.

PUSH AND PULL CLAMP



MODEL P&P-800 push and pull clamp is for use where space is limited or in circumstances where the operating handle cannot be accommodated except at some distance from the point of pressure application. It can exert up to 800 lbs. pressure with normal hand operation in either the push or the pull movement of the handle, which will automatically lock and hold work securely upon completion of the handle swing. Lapeer Mfg. Co., Lapeer,

HYDRAULIC LIFT TABLE



24,000-lb. capacity electric hydraulic Liftable is said to be suitable for use in the automotive, refrigeration, air conditioning and plastics industries. With rollers to discharge the load from either side, the 36" x 72" die table has a raised height of 40". Lowered height is 30". The hydraulic system is activated by a 11/2 hp motor and the table top is raised with a push button control. Hand valve controls lowering. Service Caster & Truck Co. Albion, Mich.

(Please turn to page 168)

to fit unusual fastening jobs

If your fastening job requires a difficult or unusual method of fastening, it is very likely that "National Screw" has a specialty fastener to fit your requirements. Here are three of the many "National" Specialties that have proved successful.



"ROSAN"* INSERTS give the strength of a steel tapped hole to soft metals, plastics or wood. A serrated ring locks the insert to the parent material so that it can't loosen, turn or pull out under tension or torque. ROSÁN STUDS can't loosen or turn—even under vibration.







"LOK-THRED"** fasteners hold securely in place.

This new thread design for studs, bolts and screws is the only thread that of itself holds tight. Actually, it becomes tighter in service, even under vibration. Stronger in both tension and torsion, "LOK-THRED" forms a seal that liquids under pressure cannot penetrate.





"HI-SHEAR"* RIVETS reduce weight, increase shear strength. "Hi-Shear" Rivets have a shear strength of 75,000 p.s.i. When used to replace bolts and nuts, they reduce weight and are easier to install. The "Hi-Shear" Rivet consists of a specially formed heat-treated alloy steel pin, headed at one end and grooved at the other. An aluminum collar fits the grooved end and forms a high button head when deformed by a riveting tool. To remove, simply destroy the collar and push out the rivet.

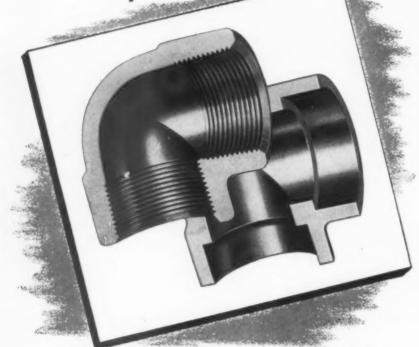




(*Reg. U.S. Pat. Off.)

THE NATIONAL SCREW & MFG. COMPANY, CLEVELAND 4, OHIO





Controlled Quality

FORGED STEEL FITTINGS STAY IN SERVICE LONGER

Fact Rigid laboratory control of forging processes increases strength and toughness.

Fact Controlled grain flow provides maximum resistance to shock, strain and stress.

Fact Dense, homogeneous metal structure retards action of erosion and corrosion.

Ample Stocks... Prompt Service... Carbon, Stainless and Alloy Steels 1/8 through 4 inches, 2000 through 6000 pounds.

Write for Catalog, Vol. 2, Today

00924200

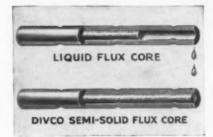
LADISH CO.

CUDAHY, WISCONSIN (MILWAUKEE SUBURB)

District Offices: NEW YORK . BUFFALO . PITTSBURGH . CHICAGO . PHILADELPHIA CLEVELAND . ST. LOUIS . HOUSTON . NEW ORLEANS . LOS ANGELES

STOCKED AND SOLD BY LADISH DISTRIBUTORS IN PRINCIPAL CENTERS

ACID CORE SOLDER



DIVCO acid core solder uses a heavy cream-like flux that remains non-fluid and will not run out at normal temperatures, avoiding messy spools and acid burns that often result from the leakage of liquid flux. When heat is applied the flux flows freely. It has been used on all solderable metals, including stainless steel, inconel, and nickel. It is furnished in standard spool sizes. Division Lead Company, Dept. 110, 836 W. Kinzie St., Chicago 22, Ill.

FOLDING UTILITY TABLE



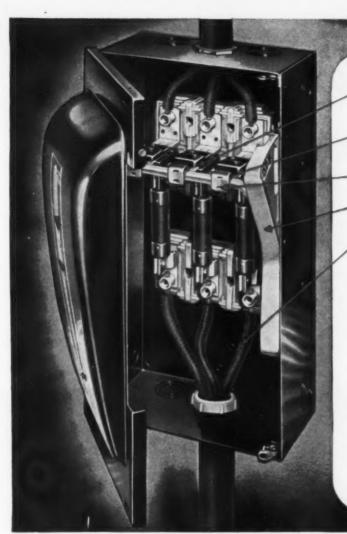
ALL-STEEL table, designated the Cosco utility table, provides 714 square inches of baked enamel working surface. Self-locking braces prevent the legs, which are arc-welded together in pairs, from shifting or closing until the braces are released. The table folds up compactly and can be stored in a space two inches wide. It is 34" long, 21" wide and 29½" high. Legs have floor-protecting, rounded gliders. Literature available. Hamilton Manufacturing Corp., Columbus, Ind.

NEW MASTER COLLET



PADS may be changed in the Style "SM" Master Collet without removing the collet from the spindle. The pads are held in place by means of a standard socket set screw that locks in a T-slot in the face of the collet. With one set of master collets any size or shape can be handled up to the full machine capacity by inserting the proper pads. Pads are interchangeable among all makes of machines of equal capacity. Collets are available for machines of 1" capacity and over. Sheffer Collet Co., Traverse City, Mich.

(Please turn to page 172)



- Dangerous arcs are snuffed instantaneously by BullDog's exclusive Vacu-Break Arcing Chamber.
- 2Fuse failures and damaging high temperatures are reduced by self-aligning "Clampmatic Contacts."
- 3 Fewer moving parts means less chance for trouble—fewer calls for maintenance men.
- 4No more broken switch handles. BullDog's husky rocker-type handle operates with maximum ease and is built to withstand abuse.
- 5 Skinned knuckles and distortion of cables are eliminated . . . ample wiring space for easy installation.

This cutaway view of arcing chamber, with part of bakelite cover removed, shows how the pressure contacts operate in a minimized air space which confines and reduces arcing.



Attractive, efficient BullDog Vacu-Break Safety Switches come in various capacities. BullDog manufactures Vacu-Break Safety Switches • SafToFuse Panels • Superba and Rocker Type Lighting Panels • Switchboards • Circuit Master Breakers • "Lo-X" Feeder BUStribution DUCT • "Plug-In" Type BUStribution DUCT • Universal Trol-E-Duct for flexible lighting • Industrial Trol-E-Duct for portable tools, cranes, and hoists.

No parking for arcing with Vacu-Break switches

THAT'S RIGHT... this switch eliminates the threat of dangerous arcs and high temperatures... remains just as cool as a cucumber. It has no reason to worry about such things.

In BullDog Vacu-Break Safety Switches, electrical contact is made and broken in a special arc-resistant chamber. Arcs are smothered by lack of oxygen before they have a chance to burn or pit contacts... or build up dangerously high temperatures. And BullDog's "Clampmatic Contacts" assure a bolt-tight connection for cool, efficient operation.

Arcing means trouble

Uncontrolled arcing in switches means all-around trouble. It's more than a matter of menacing your operators' safety. Burning and pitting of contacts with accompanying high temperatures result in lowered operating efficiency and eventual breakdown.

With the exclusive Vacu-Break principle, BullDog Safety Switches put an end to these problems. Arcing is held to an absolute minimum, and clean make-and-break of contacts insures long and efficient service.

See a BullDog Vacu-Break Safety Switch in operation. Call your nearest BullDog Field Engineer. He'll be glad to take you to a typical installation nearby and let you see for yourself.

Troublesome switches are a major problem in electric power distribution. Your first thought should be of your nearby BullDog Field Engineer. He is an expert in this field, and can furnish you with valuable advice and suggestions when you put your power problems in his hands. A consultation with him in the beginning can save you money and trouble later.

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REPRESENTATIVES IN PRINCIPAL CITIES



BALL-BEARING SWIVEL JOINTS FOR ALL PURPOSES

PORTABLE MACHINE FOR MOLDING SAND PREPARATION



JUNIOR Nite-Gang is described as a portable sand preparation unit for the small foundry which eliminates tedious hand shoveling and provides magnetic separation, thorough screening and aeration of molding sand. The machine may be pulled or pushed to any floor in the foundry. It has a capacity of 20 tons per hourdry. It has a capacity of 20 tons per houndry. Additional information available. Beardsley & Piper, Division of Pettibone Mulliken Corp., 2424 N. Cicero Ave., Chicago 39, Ill.

COMPACT D-C RELAY



TYPE "E" relay is a sensitive d-c relay designed for electronic tube circuits, alarm systems and other similar applications. The unit, with an overall size of $2\frac{1}{2}$ " x $1\frac{1}{4}$ " x $1\frac{1}{2}$ ", is suited for use in compact assemblies where space is limited and where control requirements do not exceed single pole, double throw. Has a contact capacity of 5 amperes, at 25 volts non-inductive load. Power consumption 60 millowatts. Comar Electric Co., 3148 N. Washtenaw Ave., Chicago 18, Ill.

DIAMOND DRESSING TOOL



DRESSING on large diameter and broad faced grinding wheels can be accomplished with a tool of 1/10 the cost of a single point dresser and approximately (Please turn to page 174)

R/M rubber sheet packing

R/M makes a complete line of rubber sheet packings, designed to meet operating conditions in chemical and oil processing plants where high temperatures prevail, as well as general purpose rubber sheet packings for coldwater service at low pressures.

R/M Red Rubber Sheet Packing, No. 625, is one of the most popular sheets. It is made of long-lasting, tough red compound that conforms to rough surfaces. Recommended for air, cold or hot water, and steam up to 150 pounds.

Resilient Flexlastic Sheets for cold water, low pressures, general service and for pipeline gaskets are supplied in three different styles . . . "C. I." Sheet, No. 635, with one ply of cloth for each 1/16" of thickness . . . "C. O. S." Sheet, No. 638, same as No. 635 but reinforced with an additional ply of fabric on one side . . . and "C. B. S." Sheet, No. 641, same as No. 635 but reinforced on both surfaces.

R/M Diaphragm Sheet, No. 645, for damper regulators, is a high-tensile, square-woven duck covered with Flexlastic, compounded to resist air, water, steam and oil.

These specialized sheet packings are typical of the many packings of all types which your authorized R/M distributor can supply to meet the packing needs in your plant. Call him today for reliable packing service.





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ASBESTOS TEXTILE & PACKING DIVISION

MANNEIM, PA. . BRIDGEPORT, CONN. . NORTH CHARLESTON, S. C. . PASSAIC, N. J.

We also manufacture a complete line of Asbestos Textiles, Friction Materials, and Industrial Rubber Products.

BUSINESS IN MOTION

To our Colleagues in American Business ...

This is the story of a briefcase with a new combination lock. In fact, it is the story of a growing line of leather goods bearing the lock. The people who carry that luggage probably are conscious of nothing except that it looks very well indeed, and that the combination lock is new in design, easy to operate, and entirely reliable. What more should they ask?

But there is an inside story that they would never dream of. They would never think that there is any connection be-

tween a compact carried by the ladies, and a lock on a brief-case carried by the men. But there actually is. You see, the leather goods company wanted that lock to be as near perfect as possible. Like any-body with a new idea, it was fussy about

reaching for perfection. So it went to a manufacturing jeweler to have the lock made. The idea was that such a company certainly could make the lock with the necessary beauty, precision and economy. It was an excellent idea, though somewhat unorthodox from the viewpoint of those who think only in terms of what is called "normal channels of trade." It is a pleasure to report that the association has proved to be extremely successful.

Revere entered this picture because

the jewelry maker is an old customer for some of Revere's finest metals. Specifications for the lock included the use of solid brass for both exposed and operating parts for which beauty, reliability and corrosion-resistance are required. Die castings and also steel are used in their appropriate places, thus again demonstrating that there is no one metal suitable for every use, but that each metal has its proper field. Incidentally, solid brass is not only used in the lock, but also in the handle posts.

This case of the combination lock interests Revere not only because it uses Revere brass for quality, but because it represents a lot of imagination in selecting a fabricator. If a jewelry firm can make locks, perhaps a coppersmith could

make earrings, and diversification would add to the security and profits of both. Imagination is a precious thing. Some people consider it the most important factor in business. Revere thinks it has some imagination, as have all good suppliers to business. Whatever it is you make, Revere suggests you ask your suppliers to do a little thinking with you and for you. After all, every bill you pay, as well as every one you send out, includes an inevitable charge for brains, know-how, imagination.

REVERE COPPER AND BRASS INCORPORATED Founded by Paul Revere in 1801



Executive Offices: 230 Park Avenue, New York 17, N. Y. 1/3 the cost of an ordinary cluster tool, maker states. Known as the C-7x, the tool contains seven diamonds with a total diamond weight of between $1\,1/3$ and $1\,1/2$ carats. The shank diameter is 7/16'' and the diamonds are set in Colmonoy

(Continued from page 172)

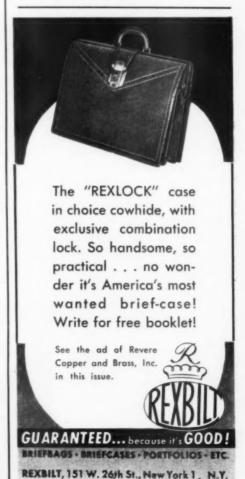
metal. Bulletin available. Diamonds & Tools Inc., 19345 John R. Street, Detroit 3, Mich.

FLEXIBLE TEMPLATE



THIS flexible template, of spring steel and aluminum construction, duplicates curves full size in a matter of seconds, maker states. It can be set and locked to any desired shape, contour, curve or radius and transferred anywhere for construction or checking purposes. Springs back to original position when unlocked. Used to copy curves from blueprints, to take off construction lines, etc. Available in lengths of 1-foot intervals. Shortest length 2-feet. C. H. Clark and W. E. Poggenburg, 4900 Wynnefield Ave., Philadelphia, Pa.

(Please turn to page 176)



H&D BOXES

DESIGNED to protect



his corrugated shipping display box is easy to handle in the packing department and provides real product protection in transit. But this is only the beginning. When the box reaches the dealer, it is quickly opened into a colorful, sales producing counter display. It exhibits and merchandises the product at point of purchase and increases sales. For an outstanding sales success consider the H & D Duplex. Consult the H & D Package Laboratory on ALL packaging problems.

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CANDILLE, ONIO. . TORGROUP, ONICALO . MATERIORY, MASS



There's a True Thrift Lesson in-



Office Manager: Guess I've thrown away a canceled check
I need badly to prove payment of a bill!

Draftsman: We have similar trouble. Instead of using permanent Arkwright Tracing Cloth for every drawing, we use temporary tracing paper. Then — when we happen to need it again, it has been discarded or has become brittle, opaque and useless in the file!

If a drawing is worth keeping — it is worth making on dependable Arkwright Tracing Cloth. The trifling extra cost insures years of permanence — no chance of becoming dogeared and torn by use nor opaque and illegible by age, as perishable tracing paper is apt to do. Arkwright is woven, bonded and processed for enduring transparency. It is real economy — good business — to use Arkwright, always!

Send for generous working samples of Arkwright and judge its superiority over any substitute. Arkwright is sold by leading drawing material dealers everywhere. Arkwright Finishing Co., Providence, R. I.

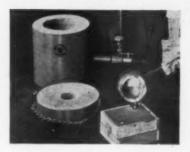
The Big Six Reasons Why Arkwright Tracing Cloths Excel

- 1. Erasures re-ink without feathering.
- 2. Prints are always sharp and clean.
- 3. Tracings never discolor or go brittle.
- 4. No surface oils, soaps or waxes to dry out.
- 5. No pinholes or thick threads.
- 6. Mechanical processing creates permanent transparency.



ARKWRIGHT TRACING CLOTHS AMERICA'S STANDARD FOR OVER 25 YEARS

SMALL MELTING FURNACE



FOUNDRY Junior is the name of a small melting furnace with all equipment and tools necessary to produce sand and plaster mold non-ferrous castings. Unit consists of furnace, crucible, tongs, crucible holder, skimming and stirring rods, asbestos gloves and goggles. Molding equipment includes foundry sand, flask, riddle, rammer, etc. The furnace shell is capable of operating at 2400 F. The furnace will hold crucibles having a working capacity of 10 lbs of aluminum or 34 lbs. of brass or bronze. Sawyer Bailey Corp., 785 Hertel Ave., Buffalo 7, N. Y.

NEW PHASE-SEQUENCE INDICATOR WIDE range of applications in manufacturing, industrial and central station fields is claimed for a new phase-sequence

indicator that is entirely static, with no moving parts, bearings, or pivots. It is applicable to either 120-, 240-, or 480-volt circuits at 25, 50 and 60 cycles. It is housed in a leatherette-covered wooden case to protect the two Type NE-51 standard neon lamps. Three 30" leads, which are an integral part of the instrument, have insulated clips for quick, easy operation. Meter and Instrument Divisions, General Electric Co., Schenectady 5, N. Y.

PARTS CONVEYOR



THIS parts conveyor, using a steel link conveyor type belt constructed of 16-gauge steel stampings spaced to provide a mesh measuring 9/16" square, is suited for heavy duty use, for sharp metal parts or heated material. This model is 8'—6" long. The belt is 16" wide. The loading height is variable from a 9" minimum to a 24" maximum. Discharge height is adjustable from 70" maximum to a 33" minimum. Steel cleats prevent "backsliding" on the belt at any angle of incline. Further information available. Howard Engineering & Mfg. Co., 2235 Buck St., Cincinnati 14, O.

New Sole Supplier!



Johansson Gage Blocks

now made for all Western Hemisphere by Brown & Sharpe

With the recent purchase of the Johansson Division from Ford Motor Company, Brown & Sharpe now acquires all rights to manufacture and distribute Johansson Gage Blocks and Accessories throughout the Western Hemisphere.

Thus, industry is assured a continuing, dependable source of supply for Johansson products of the same unprecedented precision that has made them the world-wide measuring standard in mass production of interchangeable parts.

The Brown & Sharpe name is industry's guarantee that the traditional precision of Johansson Gage Blocks and Accessories will be maintained without compromise. This world-famous name has symbolized leadership in the development and manufacture of precision measuring devices, machines and tools for more than 100 years. Brown & Sharpe Mfg. Co., Providence 1, R. I.

We urge buying through the Distributor

BROWN & SHARPE

it's an OBRAKO

Reg. U. S. Pat. Off

SELF-LOCKING SOCKET SET SCREW



The KNURLED cup point of this popular "Unbrako" Socket Set Screw makes it a Self-Locker . . . because the keen edges of the counter-clockwise KNURLS won't creep, regardless of the most chattering vibration. A real fastener, if ever there was one . . . positively won't shake loose!

Knurling of Socket Screws originated with "Unbrake" in 1934. Write us for the name and address of your nearest "Unbrako" Industrial Distributor and your copy of the "Unbrako" Catalog.

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NEW BOOK ON PRECISION INVESTMENT CASTINGS

"Precision Investment Castings" is the title of new book by Edwin Laird Cady, on this comparatively new production process, which the author states could be profitable as an industrial process in at least 25,000 metal products plants, foundries and machine shops, and likewise to thousands of manufacturers and product distributors who would buy from the casting houses.

The first few chapters tell what prectsion casting is, what it does and how it does it, reviewing such factors as history, quantity production, production runs of 1,000 to 5,000 parts, and small quantity production in lots of 1 to 1,000 and the ability of precision investment casting to suit the production run to actual needs. Purchasing agents may find Chapters 5 and 6 of especial interest. The tormer shows an excellent method for comparing production processes and selecting the process to be adopted, and the latter compares fundamental metal working processes in clear terms.

The book is amply illustrated throughout its 356 pages. It is published by the Reinhold Publishing Corporation, 330 W. 42nd St., New York., N. Y., price \$6.00.

BOOKLET DESCRIBES COLD FINISHED STEEL BARS

A new 28-page booklet, describing cold finished steel bars, has just been published by the Union Drawn Steel Division of Republic Steel Corporation. This includes typical uses and mechanical properties of the types most frequently used, including machining grades of stainless, as well as data on commercial finishes, sizes, and tolerances. Copies are available from Republic Steel Corporation, Republic Building, Cleveland 1, Ohio.

NEW INDUSTRIAL USES SEEN FOR "COLD" RUBBER

Use of "cold" rubber in many important products besides tires is seen by the Gates Rubber Co., Denver 17, Colo., one of the first processors to receive supplies of the new synthetic in commercial quantities through participation with the Copolymer Corporation in pioneering the revolutionary "low temperature" processes.

Greatly increased control oover the molecular structure is gained by cold-processing at temperatures of 41° down to 0°, as against the 122° previously required, according to C. H. Mingle, director of specialized research for the company. This results in a product which tests prove withstands abrasion fully 30% longer than the best natural rubber, he said.

This increased resistance to abrasion has great advantage in lengthening the service life not only of tires but of products such as the following, according to Mr. Mingle: V-belts, many types of industrial hose, rotor tubes, stator tubes, impellers, pump cases and rubber covered parts used in the mining and rock products industries, sanding pads, etc.

(Please turn to page 182)



With Spang CW Pipe even close center bends are easy to make, without the use of pipe filler. And you can make them with full confidence that Spang CW will not fracture or crush. For more than 100 years Spang Pipe has been known for its excellent bending qualities.

Speed your jobs by using Spang CW . . . the pipe that's famous for the following qualities:

Easy to Cut • Bend, Thread or Weld • Uniform Lengths • Smooth Inside Surface • Sound Weld from End-to-End of Pipe • Accurate Threaded Ends • Accurate Size • High Concentricity.

In spite of the great demand, your Spang distributor will do everything possible to speed the delivery of your orders for Spang CW Pipe.

SPANG-CHALFANT

Division of The National Supply Company

EXECUTIVE OFFICES: PITTSBURGH, PA.

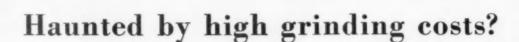
District Sales Offices: Atlanta; Boston; Chicago; Denv Detroit; Houston; Les Angeles; New York; Philadelphia; Pittsburgh; St. Louis; San Francisco; Tulsa





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High grinding costs can be lurking unseen behind any of your grinding operations.

Often, only extensive training and experience in grinding-cost problems will rout them out for you. That's why it would pay you to let Peninsular engineers conduct your witch-hunt.

You see, they know where to look for excess grinding costs—and they look everywhere! Their skill is in their ability to examine every factor of your operations, and not miss a single possibility.

They start with a thorough examination and analysis of your particular grinding problems, your machines, your methods, the materials you grind.

Their recommendations cover not only

wheel specifications, but ideal work speeds, wheel speeds, machine adjustments. Their analysis and their recommendations will include every factor that can increase your wheel life and stock removal, improve your finishes, and decrease dressing time and expense.

If anyone can cut your grinding costs, these experienced Peninsular engineers can. And the chances are overwhelming that your grinding costs can be cut.

When may a Peninsular engineer call on you?

The Peninsular Grinding Wheel Co., 729 Meldrum Ave., Detroit 7. Sales Offices: Chicago, Philadelphia, Buffalo, Cleveland, Pittsburgh, Houston, St. Louis, Cincinnati.

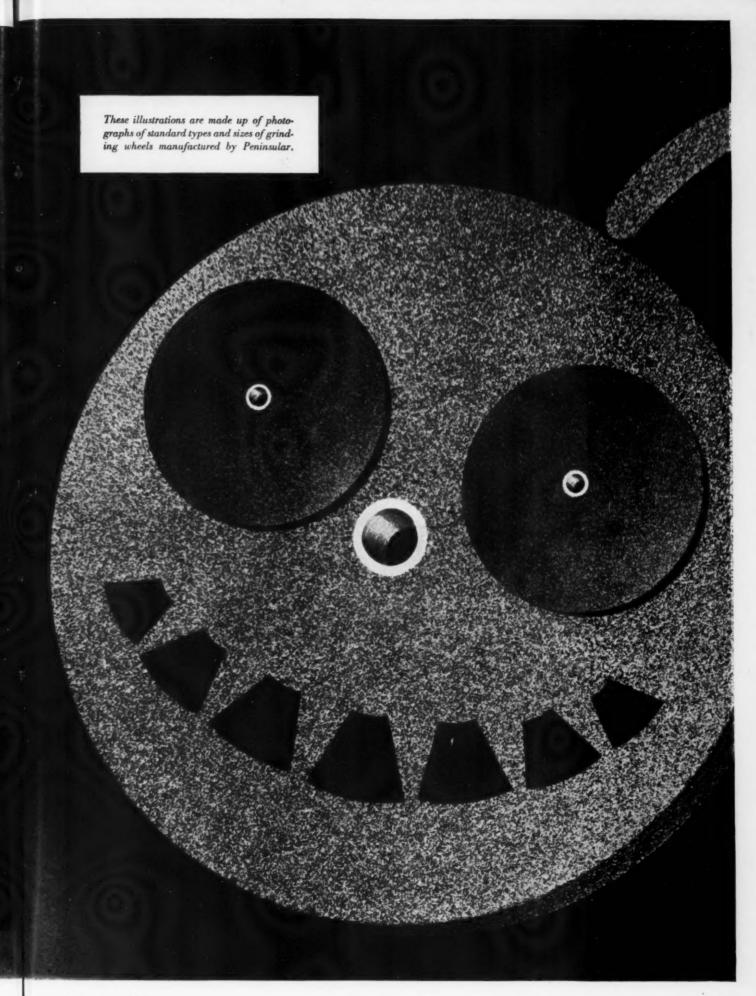
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2 FOUNDRIES

on 2 main line railroads

equipped for fast, efficient production to meet your casting requirements. Special facilities for rollover and copeand-drag production to 150 pounds. Other castings up to 1000 pounds. Send us your inquiries or ask for a representative to call to discuss your carting requirements.



Modern Materials Handling Key to Lower Costs

Inadequate materials handling techniques are resulting in high production costs and production delays for hundreds of small and medium sized businesses, according to S. W. Corb'n of General Electric's Industries Division.

Speaking with other G-E engineers and materials handling experts at a New York City press preview for that company's new More Power To America program on "Materials Handling In Receiving, Warehousing, and Shipping", Corbin asserted that these companies often don't even know that they have a materials handling prob-

lem.

"They just don't realize how modern materials handling can help them cut costs, increase production, reduce inventories, and relieve manpower shortages," he said.

Speaking on "The Problems Of Materials Handling", J. R. Kilander, materials handling expert of G.E.'s Apparatus Department Manufacturing Divisions, called for a major revision in present accounting procedure to reveal the true costs of materials handling.

"When such systems are available, making it obvious just what it does cost to move a ton of steel from boxcar to warehouse to factory, top management will be-

gin to take more of an interest in materials handling," he said. "Such a system would reveal the spots where work should be done first." Kilander also recommended the delegation of competent engineers on a full time basis, to materials handling problems with full authority to put their findings into action. Increased standardization and simplification of equipment and methods was also suggested as a solution to many problems.

He predicted the future free fow of shipping pallets between companies and areas in place of present restrictive regulations, and said that use of short-wave radio on tractor trains and trucks within large plants might do much to assure full

utilization of equipment.

The new materials handling program, thirteenth in the More Power To America series, typifies exactly the MPA philosophy of increased benefits through increased electrification and modernization, E. W. McChesney said at the meeting.

F. W. McChesney said at the meeting. "There is still far too much use being made of the old "Hernia Method" of moving materials from one place to another," McChesney declared. "That may have been effective thirty or forty years ago, but today, with the cost of labor what it is

(Please turn to page 184)

DEPT OF COMMERCE ISSUES BOOK ON SPONGES

Why Americans, who are the world's greatest users of natural sponges, have had a serious shortage of this commodity since 1939 and many other practical questions on sponge production and distribution are answered in a new booklet entitled "World Trade in Sponges," just issued by the Department of Commerce.

In 1939, the booklet states, the western Atlantic sponge beds were badly damaged by a fungus blight which was followed by further losses from natural causes in 1946 and 1947. Product on fell from 1,750,000 pounds in 1938 to only 300,000 pounds in 1947. The result has been an almost complete breakdown of the industry.

This loss of production has been compensated to some extent by imports from the Mediterranean. With the revival of European industry and trade, however, much of the Mediterranean production is expected to go to European markets. Consequently, the future supply of sponges for the American market is not at all secure.

The recovery of the western Atlantic deep water sponge beds is expected to require from 10 to 20 years. In the shallow water a somewhat more rapid recovery is anticipated, but even there at least 5 years will be required to recover a maximum yield.

The booklet describes thirteen kinds of commercial sponges and discusses briefly the principal areas of the world where they are produced. The western Atlantic beds, wasted by the blight, include waters off the coasts of Florida, Cuba, the Bahamas, British Honduras, Jamaica, and Nicaragua. The Mediterranean beds are scattered all

along the coast from Italy eastward and along the northern coast of Africa.

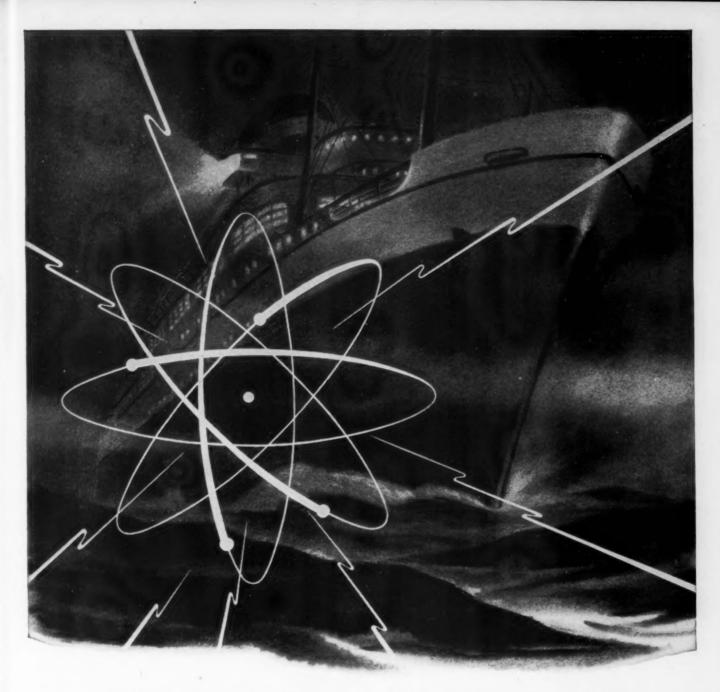
There are extensive sponge beds in the vicinity of the Philippine Islands, mainly in the Sulu Sea, but the Philippine sponge industry is still a minor one. Other possible future sources of supply in the Pacific are the Caroline and Marshall Islands where Japan was experimenting with sponge production before the war.

The booklet tells how sponges are harvested and cleaned of animal matter, and then sold at auction to commercial buyers. The next steps are trimming, sorting, and packing for shipment to market.

The author of the 95-page illustrated booklet is A. H. Stuart, General Products Branch, Commodities Division, Office of International Trade. It may be obtained from the Superintendent of Documents, Government Printing Office, Washington 25, D. C., or from any field office of the Department of Commerce for 30 cents.

FASTEST STEEL ROLLING MILL SOUND-MOTION PICTURE

A five-minute sound motion picture film titled "The World's Fastest Steel Rolling Mill," which describes the new five stand tandem mill at the Aliquippa Works, Pa., is announced by the Jones & Laughlin Steel Corporation, 311 Ross St., Pittsburgh, Pa. This newsreel type short film shows the over-all layout of the mill, welding machine on the continuous pickle line, entry end of tandem mill, the "Roller" at the mill controls, close-ups of delivery end of tandem mill, and follows the production of steel strip for tin-plate through J & L assorting room at the tin mill.



Safely through the night, guided by magic eyes and ears

With Radar penetrating fog and darkness, Loran locating position, Sonar sounding the depths, and Radio reaching far in all directions . . . safety of ocean travel has made tremendous gains. On many liners, freighters and tankers, power for these and other safeguards is assured by trustworthy Exide Batteries.

There are Exide Batteries for every storage battery need. They serve you directly and indirectly in numerous ways. Exide Batteries supply safe, dependable motive power for battery electric industrial trucks and mine haulage units. They are used by telephone, telegraph and electric light and power companies... by radio broadcasting stations... by municipalities for fire alarm systems. On aircraft they perform many tasks.



Railroads use Exide Batteries for car lighting, air-conditioning, Diesel locomotive cranking and signal systems. And on millions of cars, trucks and buses they give daily proof that "When it's an Exide, you start."

Information regarding the application of storage batteries for any business or industrial need is available upon request.

THE ELECTRIC STORAGE BATTERY CO., Philadelphia 32 Exide Batteries of Canada, Limited, Toronto

1888...Dependable Batteries for 60 Years...1948



(Continued from page 182)

and the necessity of meeting tremendous production schedules, it isn't only out of date. It's bankruptcy, in many cases, not to change."

Notwithstanding the fact that electric motors furnish about 86 per cent of today's industrial horsepower, American industry is less than 50 per cent electrified in terms of jobs that electricity can do most efficiently and economically, he pointed out.

The entire new materials handling program features a sound, Kodacolor, motion picture and manual containing extensive descriptive data. The picture illustrates all types of materials handling equipment and shows installations in which each is best used. The manual contains data, available nowhere else, on engineering problems, power distribution, and the selection of equipment connected with materials handling, according to the program's sponsors.

Arrangements are being made for the sponsorship of the program throughout the country by equipment manufacturers, electric utilities, and local G-E offices.

HAMMER FACES MADE OF VINYLITE PLASTIC

Characterized as being Marproof hammers, the hammers shown in the accompanying illustration have striking faces made of vinylite elastomeric plastic fastened to drop forged heads. They are said to have the driving power of standard



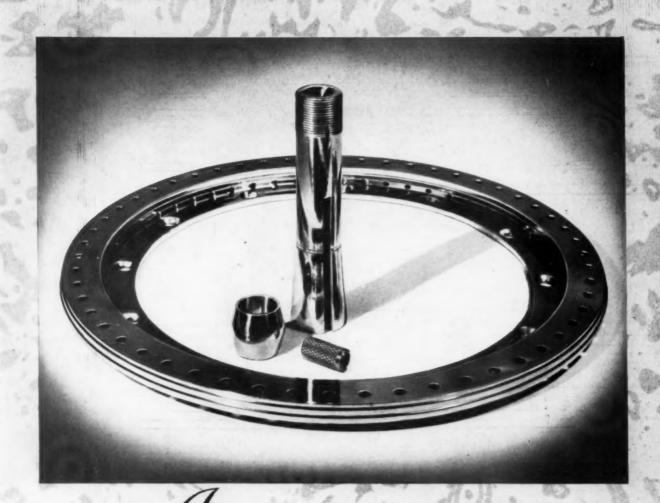
Marproof hammers have striking plastic faces.

machinist hammers of equal weight, and can be used for a wide variety of work without danger of marring such easily damaged surfaces as aluminum and other soft metals, as well as highly polished woodwork. They are made by the Vlchek Tool Co., 3001 East 87th St., Cleveland 4, Ohio.

7 7 7 STAINLESS STEEL PAINT

Bulletins issued by Charles Hardy, Inc., 420 Lexington Ave., New York, N. Y., describe Stainless Steel Powder, Type 18-8, and 18-8 Stainless Steel Paste, respectively, which can be mixed with variety of vehicles such as clear lacquer, varnish or bronzing fluid, etc., and applied by brush or spray. Uses include maintenance painting wherever acid or salt conditions exist, or in any use where conditions require more protection than can be expected from ordinary protective coatings.

(Please turn to page 188)

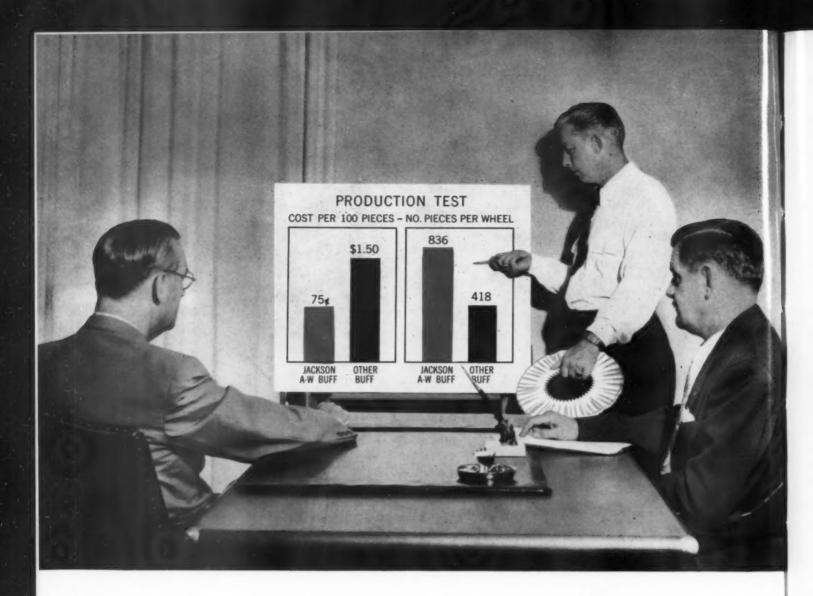


f limited space is your problem, the sleeve bearing requires less radial room than any other type. Every month millions of Bunting Cast Bronze Bearings go into service where space is so limited that a sleeve bearing is the only type capable of meeting the requirement. Our engineers are at your service. The Bunting Brass & Bronze Company, Toledo 9, Ohio. Branches In Principal Cities.

Bunding

BRONZE BEARINGS & BUSHINGS & PRECISION BRONZE BARS

40



"-and we saved 50%"

PRODUCTION FOREMAN Reports: "In buying cotton buffs without production tests, no conclusion could possibly be reached as to the merits of one product or the other."

PURCHASING AGENT

Addressing the
Production Foreman:

that would bring about a substantial saving to this company."

"Did you find in your test on the buffs that I bought for you, any difference about a substantial saving

PRODUCTION FOREMAN "Yes. The chart speaks

Addressing the for itself. One of our regular buffing wheels buffed 418 pieces at a cost of \$1.50 per hundred pieces. The Jackson Airway Ventilated Buff Wheel on the same job buffed 836 pieces at a cost of \$.75 per hundred pieces.*"

PRESIDENT Addressing Production Foreman and Purchasing Agent: "Your statement is that we will save 50%. That's good news to

me in the face of today's rising production costs. It is apparent, and you have proved, that it is smarter to consider the final wheel cost and increased production rather than the initial cost of a section of buff. I shall presume that action will be taken immediately to use only the Jackson Airway Ventilated Buff."

* from an actual case history.

JACKSON
21-03 FORTY-FIRST AVE.

NOTE THESE EXCLUSIVE FEATURES:

HALF AS MANY SECTIONS

Jackson Airway Ventilated Buffs have more material per section . . . are twice the width of conventional buffs. You buy half as many sections.





RUN AT HIGHER SPEEDS

Destructive internal heat generated at high speeds is eliminated entirely by the exclusive Jackson Airway Ventilation feature.

WILL NOT BURN

Ventilated side plates and internal center plates provide maximum air channels, prevent burning entirely . . prolong wheel life.





WILL NOT RAVEL

Cut on the bias, these buffs cut faster, work cleaner... are free from raveling and lint. Hold buffing compounds longer.



The superior design and construction of Jackson Buffs adds hours of production time per wheel life . . . at lower wheel costs.



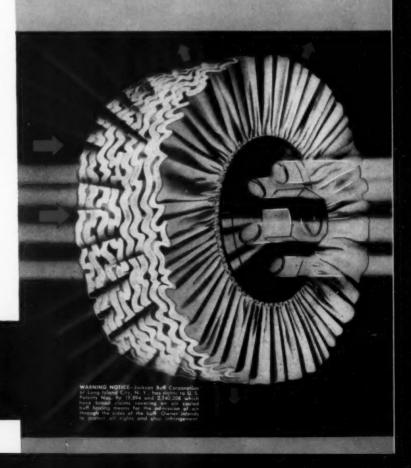
Jackson Airway Ventilated Buffs are available to meet your particular buffing requirements on all metals and most plastics. We will prove our claim of a 50% Saving on your equipment. Write, wire or phone for a demonstration.

BUFF CORP.

LONG ISLAND CITY 1, NEW YORK

JACKSON AIRWAY Ventilated BUFFS outwear and outperform other types of buffs

Preferred by men who use them, these buffs are faster cutting, cleaner and cooler running, will not ridge work, use less compounds, require less effort for better finish. Preferred by men who are accountable for increased production resulting in lower costs because they buff more pieces per wheel . . . cut buffing wheel costs 50%. Bring your buffing operation up-to-date . . . insist on longer lasting, money saving Jackson Airway Ventilated Buffs.



TODAY'S METAL CUTTING REQUIRES GOOD CUTTING FLUID



"CHIP" WRIGHT Material shortages and other unusual conditions of this post war period emphasize the need for sound cutting fluid practices. Uncontrollable changes in material quality necessitate substitution . . . calling for cutting fluids with wide latitudes and broad tolerances. When you are faced with such machining problems, the smart thing is to use the "know-how" of established cutting oil people. They have the broad, practical experience based on many years of solving difficult machining problems, and the technical knowledge and facilities to apply it to your job.

An Economical Solution
SUPERKOOL

Base Cutting Oil

SuperKool Base Cutting Oil is available already correctly mixed for your convenience. Eliminating on-the-job mixing makes possible worthwhile economies in time, labor and money. For recommendations of SuperKool mixes, consult a Stuart service engineer.

Another Time-Tested Stuart Product

D.A. Stuart Oil co.

2727-31 SOUTH TROY STREET. CHICAGO 23, ILL.

NEW THERMOPLASTIC ANNOUNCED BY M. W. KELLOGG COMPANY

A new high temperature non-flammable thermoplastic has been developed by the M. W. Kellogg Company, Jersey City, N. J., which is said to be extremely resistant to chemical action; to be strong and hard, though not brittle; to give satisfactory performance over wide temperature range, from low of -320° F. to a high of 390° F.; and to have the uncommon quality of being amenable to heat treatment in a manner similar to the tempering of metals to impart desirable permanent characteristics at the temperature of use.

It is colorless and transparent, though it can be blended with solid fillers and coloring agents. It is stated that "no effect has been observed after prolonged exposure to concentrated sulfuric, hydrofluoric and hydrochloric acids, to strong caustic, to fuming nitric acid, aqua regia and other vigorous oxidizing materials.

Kel-F deforms slightly under applied pressure, returning to its original shape when pressure is released. It has good electrical and heat insulating qualities; unusual water resistance; high impact strength and other mechanical qualities.

It may be compression, transfer or inject on molded, or extruded. It has good fabricating characteristics and can be punched, drilled or machined to close tolerances.

SILICONE OIL MOLD-RELEASE

A new use for G-E s.licone oil as a mold release agent in the injection molding of aluminum and zinc die-castings, is announced by the Rosin and Insulation Materials Division of the General Electric Company's Chemical Department. The material is manufactured at the company's new s.licone plant at Waterford, N. Y. Use of the oil in emulsion form is said to facilitate production of certain type diecastings and to help provide a smooth surface on the finished parts. It wets the mold readily and penetrates any small cavity. The oil withstands temperatures up to 600 deg. F., and may be applied by brushing, spraying, or wiping. It speeds up production by eliminating sticking of the molded part to the mold surface. The oil is available in three grades with varying viscosities.

It is adaptable for a variety of other applications such as anti-foaming agent in liquid systems, as a hydraulic fluid, a damping fuid, and as a liquid for constant temperature bath. It prevents foaming in water solutions, emulsions, resins, paints and in distillation processes. For damping devices, its constant temperature viscosity permits shock to be absorbed evenly. As a hydraulic fluid it has the advantage of being practically non-flammable as well as being resistant to a wide range of temperatures.

LOOKING FOR SOMETHING? PUT A "WANTED" AD IN PURCHASING'S CLASSIFIED SECTION SEE PAGE 344



RAILWAY EXPRESS offers you a complete transportation package. Around its nation-wide facilities is built a convenient, economical shipping service including door-to-door pick-up and delivery in all principal cities and towns at no extra cost. It is designed to meet every one of your business or personal shipping requirements.

Your shipments are carried swiftly over America's railroads and scheduled airlines—providing an all-inclusive service for a single charge. Consistent improvement in equipment and methods is your assurance of a continued, dependable, coordinated shipping service to you, your community and the nation.



PURDY SERVICE on STEEL and ALUMINUM



WAREHOUSE SERVICE-

The PURDY Line



STAINLESS STEELS
COLD FINISHED STEELS
SPRING STEELS
TUBING
DRILL ROD
COLD ROLLED

STRIP STEEL
ALUMINUM SHEETS
AND COILS

~ A modern warehouse built for fast steel handling

PURDX

Phone service that takes your order in 30 seconds

Precision slitting and shearing on high speed machines 24-hour delivery by the Purdy fleet of fast trucks

a. R. Purdy Co.

ORIENT WAY & PAGE AVE., LYNDHURST, N. J.— Tel. Rutherford 2-8100

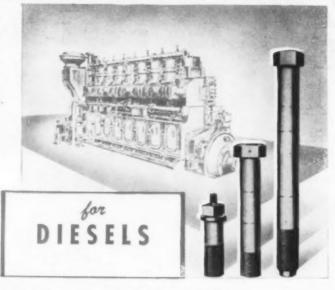
Connecticut — ENterprise 6400 New York — CHelsea 3-4455 Newark — HUmbolt 2-5566 Rochester — ENterprise 6400

Syracuse — ENferprise 6400

SPECIAL BOLTING

HEAVY MACHINERY

FOR over 30 years ERIE has specialized in the manufacture of high quality bolting. We use the very latest equipment for heat treating, machining, grinding and threading. We are certain that we can produce better bolting at a saving to you because we are specialists - send us your bolting specification for our estimale.

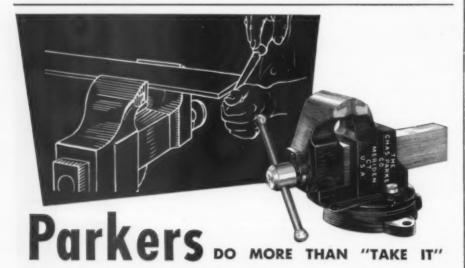


A DEPENDABLE SOURCE OF HIGH QUALITY BOLTING FOR PAUL POADS, REFINERIES, DIESELS. FARM MACHINERY, EXCAVATING EQUIPMENT AND ALL TYPES OF HEAVY MACHINERY.

ERIE BOLT & NUT CO. BRIDE, PA.



STUDS . BOLTS . NUTS ~ ~ ALLOYS . STAINLESS . CARBON . BRONZE



Modern Parker Vises are built to take punishment, but they also have the important quality of quick, firm grip action that speeds every job. Make yours these Parker "extras": swivel base, brake-type locking at any point in a 360° swing-renewable steel jaws

covering entire top of vise-non-pinching tension spring handle. Watch for announcements of Parker's new line of hinged pipe vises and woodworking vises. Parkers are sold 100% through leading distributors. The Charles Parker Company, Meriden, Conn.



Parkers are unit-packaged-factory new to you.

PARKER VISES America's First Vise Maker

DEVELOP NEW ACID CORE SOLDERS

Announcement is made by the Solder Division of Alpha Metals, Inc., 363 Hudson Avenue, Brooklyn, N. Y., of the development of acid core solders. The new product is known as Alpha Tri-Core "Leakpruf" Acid-filled Solder. Among the advantages claimed for the new solder are: Ability to solder stainless steel, monel, nickel and other metals; three cores instead of one; a flux more active than the usual zinc chloride, yet only half as corrosive, and easily washed off by water; definite soldering sequence automatically developed by three cores of flux, practically eliminating "cold solder joints", and the three core construction promotes faster melting.

The company states that the only metals which the flux will not solder are aluminum and magnesium. It is pointed out that the technique of using a core solder is quite different from using a separate flux and wire or bar. With the latter the flux liquid or paste is first applied, then



A!pha's new Tri-Core "leakpruf" acidfilled solder, showing three distinct cores with the chalk-like non-liquid acid-flux.

the solder is heated and flowed onto the metal. When a core solder is used it is absolutely necessary that the work be heated by the iron or flame. After this, the core solder is introduced to the heated metal, which has been brought up to the liquidius point of the solder so that the flux can flow onto the job ahead of the molten solder, thereby assuring a permanent bond.

If any flux core solder is flowed directly off the soldering iron or if a flame is directed at the solder itself, the flux will be so diffused by the heat of the iron or flame, that none will go onto the metal to be joined. In this case, no bond will re-

1 1 1 PLASTIC FOR COATING ALUMINUM

Announcement is made by Metal Production Corp., 111 Broadway, New York, N. Y., of the development of a new plastic to be used for coating aluminum. It is said to make aluminum impervious to violet rays, acids and salt water spray

(Please turn to page 192)

There's Precision Engineering in every POWELL VALVE

Powell makes valves by the thousands. We have to in order to satisfy the nation-wide demand.

But don't be misled! We know that quality often suffers through so-called "mass production" methods. So every Powell Valve from a standard small bronze globe to the most special design for corrosion resistance is given the most meticulous, individual attention. That's why Powell Valves have such an outstanding reputation for long life and dependable performance in every branch of industry. It pays to install Powell Valves.

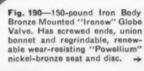




Fig. 301—125-pound Iron Body Bronze Mounted Globe Valve. Has flanged ends, outside screw stem, bolted flanged yoke. renewable bronze seat and disc holder with renewable composition disc.



Fig. 1460—Iron Body Bronze Mounted "Master Pilot" Gate Valve, with screw ends, rising stem, bolted flanged bonnet and tapered solid wedge.



Fig. 1561—Class 150-pound Cast Steel Swing Check Valve. Flanged ends and bolted cap. The disc has ample lift to permit full, straightway, unobstructed flow through the valve body.



Fig. 1503 — Class 150-pound Cast Steel Gate Valve. Flanged ends, bolted flanged yoke, outside screw rising stem and tapered solid wedge.

The Wm. Powell Co., Cincinnati 22, Ohio

DISTRIBUTORS AND STOCKS IN ALL PRINCIPAL CITIES

POWELL VALVES

Cut materials handling costs with U. S. INDUSTRIAL TIRES



UNITED STATES RUBBER COMPANY

SERVING THROUGH SCIENCE

ROCKEFELLER CENTER, NEW YORK 20, N. Y.

NEW FLUORESCENT LAMP WITH SOFT-WHITE COLOR

Development of a fluorescent lamp with a "soft-white" color, is announced by General Electric's Lamp Department, Cleveland, Ohio. The light is said to be complimentary to the human complexion, giving it a "normal, health appearance", at the same time causing colored objects and materials to look natural. New type phosphors are used in the lamp, which was produced after measuring the complexions of several hundred blondes, brunettes, and redheads, and of persons of many races. It is also stated that the light brings out the beauty of colors in fabrics and furnishings and enhances the appearance of meats and other foods.

CAPACITY ONE-EIGHTH THAT OF RAILROAD BOXCAR

An immense welded steel "package" with capacity equivalent to one-eighth that of a standard railroad boxcar has been developed by the Dravo Corporation, Pittsburgh, Pa., for handling a large number of small packages in marine, rail and motor



Dravo shipping container on exhibit at Cleveland packaging exposition.

freight shipments. It can be loaded at shipper's plant, locked or sealed and moved as a single unit, protecting the cargo against pilferage, damage and the weather. The capacity of the container is 277 cu. ft. or six tons. Among other things the container eliminates the need for expensive export crating.

WOVEN VINYLIDINE CHLORIDE PLASTIC OF MANY USES

1 1 1

Lumite, a woven plastic material, woven for use as a screen material or an upholstery material, is announced by the Lumite Division of the Chicopee Manufacturing Corp., 47 Worth St., New York, N. Y. The lumite screen cloth does not rust or stain, does not need painting, and may be washed with damp cloth and soapy water, and it is also said to be sagproof and abuseproof. It has a variety of industrial uses as it is impervious to odors, chemicals, and alkalis. As a fabric it may be used as upholstery for automobiles, buses, luggage, and furniture, and for wall coverings.

(Please turn to page 194)

A BUYING GUIDE FOR ABRASIVES



ANSWER BY CARBORUNDUM

TRADE MARK

Through our district organization, located at more than a dozen key industrial centers, users of abrasives are offered direct access to the engineering, research and wide scale technical activities of The Carborundum Company. Staffed by selected men of experience, it is the purpose of this organization

to represent The Carborundum Company locally. It is their intelligent handling of abrasive problems and their sincerity in serving customers' needs that makes every user think first of CARBORUNDUM when they think of abrasives. The Carborundum Company, Niagara Falls, New York.



Cleveland Container Products Serve Many Purposes and Fields of Activity

All are quality products . . . rightly priced . . . rapidly produced. Our Creative Design and Engineering Departments are at your service.

For the latest data and ideas check the items of interest to you.

_____ Spirally wound Tubes, Cores and Cans.

____ All fibre and combination fibre and metal cans.

__ Friction plug, slip cover, screw cap containers.

Paper thread protectors for male threads (tubes) for female threads (plugs).

_ Paper discs.

Kraft and fish paper tubes for coil forms and condenser covers.

Cosmalite—spirally laminated paper base phenolic tubing for the electrical industry.

Your inquiry will be given immediate attention.

May we serve you?

The CLEVELAND CONTAINER CO

All-Fibre Cans · Combination Metal and Paper Cans
 Spirally Wound Tubes and Cores for all Purposes

Plastic and Combination Paper and Plastic Items
 PREDUCTION PLANTS also at Prymouth, Wise., Ogéonsburg, N.Y., Chicago, III., Beroit, Mick., Jamesburg, N.J.
 PLASTICS DIVISION at Prymouth, Wise. - ARRASTIC DIVISION at Cleveland, Onice
 SALES OFFICES: Boom 5632, Grand Central Torm. Bidg., New York 17, N.Y., also 647 Main St., Martford, Conn.
 CAMARIAN PLANT: The Circuland Centainer Canada, Ltd., Pressort, Balazier.



A MACHINE
SCREW SHEAR*
THAT REALLY WORKS!
NO DAMAGED THREADS
NO BURRS

*SHEARS SIZES

#10-24, #10-32, #8-32, #6-32, and #4-40 brass or steel

"SHEARITE" Does Easily the Toughest "Little Job" in the Shop

Just thread the screw into proper threaded cutter hole (size is marked on tool); turn into hole until screw is desired length; squeeze tool handles together. Result: screw is sheared right where you want it—not a thread damaged—no burrs. Hardened steel jaws assure sharp shearing, wire cutting, and wire stripping edges. Handles are insulated.

AMP "SHEARITE"

HAND TOOL★ Shears five sizes of ma-

chine screws without damage to threads.

- * Cuts wire.
- * Strips wire.

"SHEARITE" Costs But \$3.95 each. Well boxed.

Send me	AMP .	SHEAR	ITE"
Machine	screw	cutters	at
\$3	1.95 ea	ch.	

(Enclosed find* check, money order or cash.)

ADDRESS______COMPANY_____

*Orders on Company Purchase Orders will be billed.

AIRCRAFT-MARINE PRODUCTS Inc.

1319 N. 4th Street, Harrisburg, Pennsylvania lois Canadian Representative: F. Manley & Sons, Ltd., Torento. Ont., Canada

LEAD-FREE, SUN-PROOF OUTSIDE PAINT

An entirely lead-free Sun-Proof outside paint, which it is claimed will not darken in industrial areas or where sulphurous gases are present, is announced by the Pittsburgh Plate Glass Company's paint division, Pittsburgh, Pa. The paint is also said to be featured by superior durability, hidability and color-holding qualities. Among the qualities of the new paint, the company lists the following: Excellent brushability; rapid drying; smoothness of finish; high hiding; color maintenance, and durability. The paint is available in white and colors. While primarily designed for use on wood surfaces, the lead-free paint is said to be equally effective on brick or masonry.

NEW CAN SHOWS IMPROVED AIR-TIGHTNESS

A new pocket tobacco can designed to keep tobacco factory-fresh is reported by the Can Manufacturers Institute. It marks an advance in metal packaging toward improvement of air-tightness for products requiring that protection. It is the first metal package to be developed that com-



Another feature is the hemmed top

bines the advantages of both the hinge and friction top types to give a complete closure. The hinge of the can is formed from the solid body of the can. Combined with the use of a perfect friction closure, the can is as nearly air-tight as it is possible to make an unsoldered can. It is stated that shelf-life of the metal package and contents is almost indefinite.

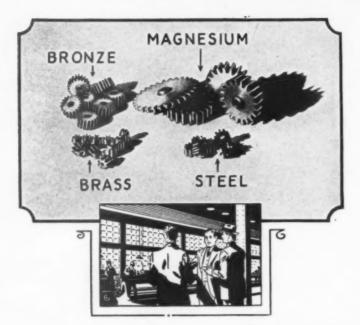
WESTINGHOUSE TO ACTIVATE PLANT TO MAKE JET ENGINES

Under a joint plant between the Westinghouse Electric Corporation and the Navy, the company will reactivate and operate the Naval Industrial Reserve plant at Kansas City, Mo., which will be used for the production of axial-flow jet aircraft engines, a design which Westinghouse pioneered in this country.

Under present plans, some months will be required to complete the layout, supply machine tools, test cells and auxiliary services, and install equipment necessary for manufacturing purposes. After machinery is installed approximately 2,000 employes will be required, with the figure eventually rising higher depending on the progress of development.

(Please turn to page 196)





We Study Our Customers' Needs

Perhaps that is why so many of them remain with us so long. When replenishing our wire and rod inventory, we keep our customers' needs in mind. As a result, besides being able to meet their regular needs promptly, we can usually give them quick service when time to them is money.

Having served American industry through two major wars and one major depression, we have built up a back log of manufacturing experience and business connections. This enables us to keep abreast of developments in metals and alloys and their fabrication. Above is a typical illustration showing four sizes of gears made of four different materials. We have adequate equipment of the most modern type to manufacture these products.

Send Us Your Orders

for screw machine products now — also for springs. We are able to give you prompt service, plus engineering assistance if you need it.



SPRINGS & SCREW MACHINE PRODUCTS

THE PECK SPRING COMPANY

40 WELLS ST. PLAINVILLE, CONN.

INSULATED SHIPPERS FOR FOODSTUFFS

New type shipping containers for fresh and frozen foods, made of tough thermo-plastic material and insulated with light weight plastic foam, have been jointly developed by the United States Rubber Co. and R. H. Bishop Company of Champaign, Ill. The bottom, sides, lid, inner container and all internal bracing are constructed of the Rubber company's Versalite, which is non-corrosive, has very low heat conductivity, and is very light in weight. The containers are completely insulated with Flotofoam, a plastic foam that weighs less than one pound per cubic foot, and permits of thin walls. Temperature inside stays unusually even during transit since heat and moisture transfer is practically eliminated through the use of a special lid seal of cushioned synthetic sponge rub-

PLASTIC WASHBASIN

A washbasin molded of DuPont Lucite, weighing 7¼ lbs. has been developed by the Durable Formed Products Inc., 6 Greene St., New York, N. Y. The basin, stainless and chipless, is available in a



Lucite washbowl weighs 71/4 pounds.

wide range of colors. The plastic is immune to the effects of food acids and most chemicals. The basin is designed to meet the requirements of divisions of the transportation industry for light equipment of this type.

NOZZLE FOR DIP TANK

1 1 1

Fire protection engineers of Walter Kidde & Company have developed a new "L" type Multi-Jet nozzle, designed for smothering dip tank and drainboard flammable liquid fires with carbon dioxide gas.

The new "L" type nozzle is designed to emit fire-killing carbon dioxide in a fanshaped blanket that hugs the liquid surface in tanks or along drainboards. It is equipped with a mounting flange for easy attachment to the top reinforcing angle with which most tanks are equipped. Depth of the nozzle from front to back is kept at a minimum by the new design about 4½ inches for ½ inch supply pipe to permit installation of inlet piping close to tank sides.

Before introduction of the new nozzle, carbon dioxide fire protection installations on exposed tanks and drainboards required

(Please turn to page 198)

Skillful Molding

runs rings around mirrors

Our molding "know-how" was put to a new test in producing the Hood Ring for this Anco Spot-

Master. The ring had to be highly flexible since it had to *stretch* around the mirror glass in assembling—it also had to be molded in such a way as to eliminate any possible visual diffusion or glare.

Solution of both problems first of all required the all-important but too often neglected, careful selection of the correct plastic material. Proper design, sound engineering and skillful molding craftsmanship did the rest.

Our ability to mold finer plastic products has now been greatly increased by our new plant— America's most modern plastics molding establishment. Let us put these new facilities plus our broad experience to work for you. You're sure to get better plastic products with greater sales appeal.



Spot-Master Mirror Ring Molded for Anderson Company, Gary, Indiana

> Write on your letterhead for the new injection Molded and Extruded Plastics catalogue.

> > Or, for detailed information about
> >
> > the state of the stat

New Plant New Address

ELMER E. MILLS CORPORATION

INJECTION MOLDERS and EXTRUDERS of: Tenite, Lumarith, Plastacele, Fibestas, Lucite, Plexiglas, Nylon, Polystyrene, Styron, Lustron, Loalin, Vinylite, Geon, Plexene, Polyethylene, Cerex, Forticel, CHARGE STATE, Saran, and other Thermoelastic Materials

2930 NORTH ASHLAND AVENUE . CHICAGO 13, ILLINOIS



A COMPLETE LINE — BEST QUALITY

"Blue Devil" socket screw products are available from stock in a wide selection of standard sizes and lengths. They are made by specialists in socket screw manufacture in a plant which is entirely devoted to the manufacture of "Blue Devil" hexagon socket screw products.



Sold through industrial supply distributors

Write today for Free catalog listing stock styles, sizes and prices.

SAFETY SOCKET SCREW COMPANY

4434 N. Knox Avenue 11 Park Place New York 7, N. Y. Chicago 30, Illinois 816 W. Fifth Street Los Angeles 13, Calif. (Continued from page 196) complicated overhead piping and space-consuming horn type nozzle arrangement that often interfered with dipping conveyors and operators' movements near tanks.



Nozzle is equipped with mounting flange for easy attachment.

Because of the flat, fan-shaped pattern of the carbon dioxide gas discharge put out by the new nozzle, more complete protection of tank liquid surface, or drainboards, can be achieved with fewer nozzles and less piping. Inspection, maintenance and cleaning are also simplified.

The nozzle is also recommended for screening door openings with carbon dioxide gas.

THREE-WAY RIDER CONTROLLED ELECTRIC LIFT TRUCK

Load-Mobile is the name of a ridercontrolled electric lift truck announced by the Market Forge Co. of Everett, Mass. The outstanding advantage of the truck is that the operator is able to handle it in any one of three ways—for short hauls, where the operator must be on and off the



truck quickly, a folding step is provided; when it is convenient for the driver to face away from the load, a swivel seat is quickly placed in that position; and, when he finds it convenient to face the load when negotiating narrow aisles, etc., the seat is easily swiveled into that position.

The unit is available in two models; 3000# and 5000#, both having 20% guaranteed overload capacity. The speed of the former will average approximately 3.5 miles per hour, and of the latter, 3.00 miles per hour.

The Load-Mobile has high capacity cushion rubber wheels; it uses a battery of 340 amp. hour capacity; lifting is by motor-operated hydraulic pump and a simple ram. The power unit, including the storage battery can be easily detached from the load carrying section, and is available as a separate unit for use with any other load carrying truck of suitable dimensions and capacity. Literature avail-

(Please turn to page 200)





CHICAGO RAWHIDE MANUFACTURING CO.

1267 ELSTON AVE. . CHICAGO 22, ILLINOIS

Manufactured and distributed in Canada by Super Oil Seal Mfg. Co., Ltd., Hamilton, Ontario



Present Day Practice in Belt Fastening

Every man who has anything to do with the purchase, application or maintenance of conveyor, transmission or V-belts will find the bulletins listed below of considerable value in conection with belt fastening work. A knowledge of present day practice in belt fastening helps reduce the loss in machine hours due to belt failures caused by the use of the wrong type of fastener or improper application. We shall be glad to send any or all of them to you or to any of the men in your organization.



FLEXCO HD Belt Fasteners are used to make a "water-tight" butt joint in conveyor belts ranging from ½" to 1½" thick and of any width. The view on the right shows the various types of rips that can be repaired with these fasteners and Flexco HD Rip Plates.

Bulletin F-100 gives complete details on how to fasten and repair conveyor belts.



ALLIGATOR Y-Belt Fasteners are now being widely used to fasten B, C and D, openend V-belting of cross woven fabric core construction now being made by most belting manufacturers. The view at the left shows a typical application of these fasteners to a drive where endless V-belts would require dismantling the machinery to put the belts on the sheaves.

Bulletin Y-205 gives complete instructions on how to use V-belt fasteners.

FLEX V Fasteners for A and B belts are also available for lighter duty V-belt drives. Ask for Bulletin V-14.



ALLIGATOR Steel Belt Leeing is in worldwide use to make smooth, flexible joints in leather, rubber, balata, stitched canvas or solid woven belts up to 3/8" thick and as wide as they come.

Bulletin A-60 tells how to fasten and repair transmission belts, Sold by Supply Houses Everywhere

FLEXIBLE STEEL LACING COMPANY
4697 Lexington Street, Chicago 44, III.

NEW ROD FOR WELDING AND BRAZING COPPER

The illustration shows sample welds made on copper with new Eutecrod 1805-FC, which is flux coated for lowest heat applications. The rod, product of Eutectic Welding Alloys Corp., 40 Worth St., New York, is designed for joining copper and it is claimed that its properties of thin-



Sample welds made on copper.

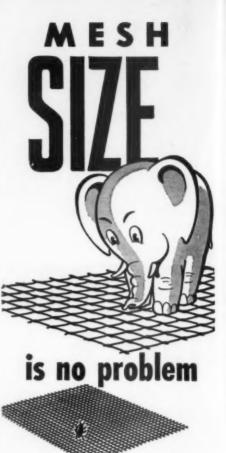
flowing, high strength and excellent affinity assure uniform deposits. The rod is recommended for various production applications called for in the joining of copper. It may be used with a torch adjusted for sl'ght oxidizing flame, atomic hydrogen or twin carbon arc, where no acetylene equipment is available. It is characterized as being a low melting brazing type alloy with tensile strength of 90,000 psi and a Brinell hardness of 160-180. It is available in ½", 3/16", 3/32" and ½" flux coated and in 1/16" bare.

REINFORCED CUT-OFF WHEEL



To meet the needs of foundries for a tough, long-life, fast cutting cut-off wheel, the Norton Company, Worcester, Mass., has developed a reinforced type of wheel known as the Norflex. The sides of the wheel present a unique file-like surface which enhances the cutting action, supplementing that of the Aludnum abrasive cutting grains in the periphery of the The wheel is available in three standard diameters, 14", 16" and 20", and in thicknesses of 5/32" and 3/16". For cutting off gates and risers, the softer of the three grades, namely, O or R, are recommended. The 3/16" thick wheels are recommended for use where maximum wheel strength is required. For jobs relatively free from danger of breakage, a harder wheel A241-V10BN is available. This wheel is not as strong or flexible as the O or R grade wheels and should not be employed where breakage with rubber wheels has been a factor.

(Please turn to page 202)



for JELLIFF

For quality wire mesh -- contact Telliff - makers of wire mesh products for over sixty years. Commercial sizes available in standard lengths of 100 feet and widths of 24 to 72 inches. Meshes of specified gauge and weave made and cut to order. Available crimped, calendered and rolled. Jelliff engineers keep abreast of current developments in new alloys, coatings and processes and apply them when studying your requirements. For best results and maximum economies, look to Jelliff.

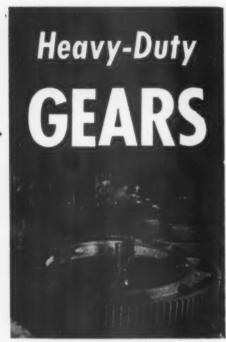
Write DEPT. 208 For Literature





STRATEGIC PLANT LOCATIONS make ROBERT GAIR your next-door neighbor





Cutting the teeth in a large diameter spur gear in the Simonds shop.

LARGE GEARS

OF ALL TYPES

up to 12 ft. dia.

When you need large or heavyduty gears for new industrial equipment-for special machinery -for repairs or replacements-call on SIMONDS GEAR where they have been a specialty for more than 50 years. SIMONDS GEAR assures you of personalized attention to your specific requirements -faithful reproduction of your most exacting specifications-and faster service because SIMONDS' production is geared to specialized work. For all types of heavy-duty gears ranging to 145" dia. in materials including cast or forged steel, gray iron, bronze, silent steel, rawhide and bakelite-send your inquiry to SIMONDS GEAR.



ANNOUNCE FUEL OIL

Commercial Standard CS12-48, Fuel Oils (Sixth Edition), effective for new production from September 25, has been announced by the National Bureau of Standards. Printed copies may be obtained upon request to the bureau, Washington 25, D. C.

WOOD PRESERVATIVE COMMERCIAL STANDARD

Commercial Standard CS152-48, Copper Naphthenate Wood Preservative, (Spray, brush, dip application), has been announced by the National Bureau of Standards, effective for new production from September 25. Printed copies may be obtained by written request to the Bureau, Washington 25, D. C.

PHILIP D. REED HEADS CED RESEARCH & POLICY GROUP

Philip D. Reed, Chairman of the Board of the General Electric Company, has been elected Chairman of the Research and Policy Committee of the Committee for Economic Development, New York, N. Y. In this capacity he will direct the research activities of the organization, succeeding Raymond Rubicam, whose term has expired.

CORROSION-PROOF PLASTIC PIPE

A new corrosion-proof plastic pipe has been developed by United States Rubber Company for use in chemical manufacturing, mining and other industries.

The pipe is made of the company's new Kralite, a blend of synthetic rubber and thermosetting resins. It will be supplied in rigid and semi-rigid forms in sizes ranging from ½ to 2 inches outside diameter. It may be bent to various radii and threaded for fittings.

The pipe is made by a continuous extrusion process. Raw materials are put into one end of an extruding machine and finished pipe come out the other end. No metal or fabric reinforcement is used in the construction.

NEW FILM ANNOUNCED

The Wolverine Tube Division of the Calumet and Hecla Consolidated Copper Company, Inc., has announced the completion of a new, 16 mm movie—"Quality Control—From Ore to Finished Product".

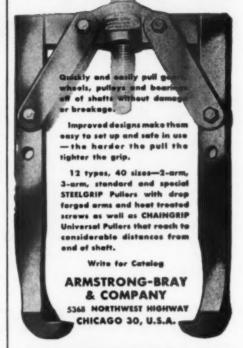
The film follows copper ore from deep in the Calumet and Hecla mines in Upper Michigan, through its fabrication as seamless, non-ferrous tubing and on to typical end applications.

The forty minute movie is in full color and complete with sound track. It is designed for professional, engineering and business groups.

Showing can be arranged (without obligation) by contacting Wolverine Tube Division, Advertising Department, 1411 Central Avenue, Detroit 9, Michigan.

(Please turn to page 204)

ARMSTRONG-BRAY GEAR and WHEEL PULLERS







Last 25 to 100 times longer

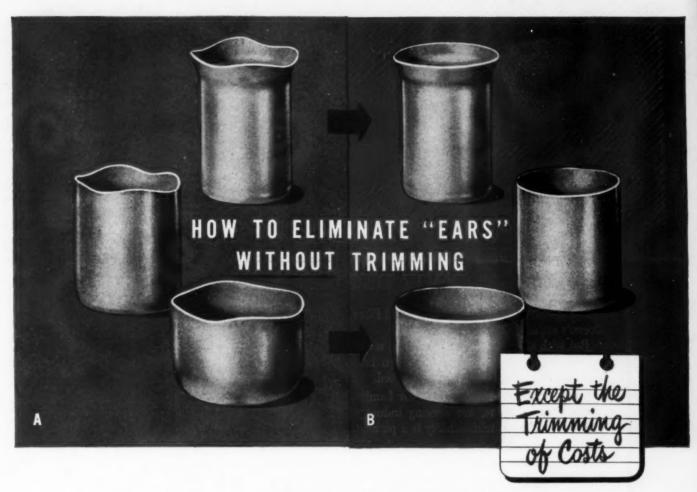
Hen them for

- · Anchoring machines
- · Installing electric wires and conduits
- Drilling bolt heles
- Mounting signs
- · Hanging cables

Kennedrills have a sapphire-hard Kennametal (cemented carbide) cutting edge that resists wear and abrasion far longer. They stay sharp in drilling masonry, cement, brick, stone, marble, micarta, porcalain, etc. Maintenance men save money when they use them because Kennadrills drill up to five times faster and the bits cost less because they can drill and drill. Bits are from ½" to 1½" in diameter and they can be used in electric drills, drill presses, and hand braces.

Write for Bulletin KP today.

KENNAMETAL Inc. LATROBE. PA



Cup or draw commercially-produced Nickel Silver or other alloys, and the metals may "ear" symmetrically—as shown in Sample Group A. What's worse, "earing" continues on subsequent draws, results in fracture if the top of the piece must be flanged or spun.

There are 2 alternatives. One is top-trimming—if there is sufficient metal in the blank. (If there isn't, every piece must be rejected after the first draw.) The other alternative is Riverside's special processing of original material—which eliminates "earing", need of trimming and risk of fracture. The untrimmed pieces in Sample Group B were drawn without ears, from specially processed Riverside Nickel Silver.

For all customers who blank, cup, draw or spin alloys, Riverside's special processing—to eliminate "directional" properties—is good insurance against rejection, expense and costly delays. If your production is hampered by "earing" or any other

alloy trouble, send us the case history of your problem. Our metallurgists will be glad to cooperate with your technicians in finding the answer—and our half-century of specialization in Riverside Phosphor Bronze, Nickel Silver, Beryllium Copper and Cupro-nickel alloys is your warrant that the answer will be right!

Send today for our catalog (specifying the alloy that interests you). Or, better still, write us as fully as you wish regarding your alloy problem.

-INSIDE RIVERSIDE-

Through continual repetition, the word "service" has become almost meaningless. Here at Riverside, we give it this definition: "To do for every customer all that we would require if we were in his position—then do a little more".

RIVERSIDE MAKES A FULL RANGE OF STANDARD (AND SOME SPECIAL) NICKEL SILVER AND PHOSPHOR BRONZE ALLOYS

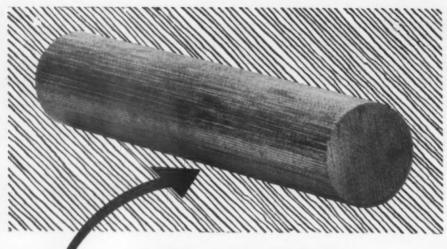
Visit The Riverside Metal Company Booth #1758, National Metal Exposition and Congress, Philadelphia, October 25-29.

THE RIVERSIDE METAL COMPANY

RIVERSIDE, NEW JERSEY

NEW YORK, CHICAGO, HARTFORD, CLEVELAND





FROM ROD STOCK TO SUPPORT BLOCK

That smooth cylinder of Taylor Phenol Fibre pictured above doesn't appear very complex.

But with a few deft motions in the machine shop, it becomes the hinge support block shown below . . . intricate, carefully engineered, highly specialized.

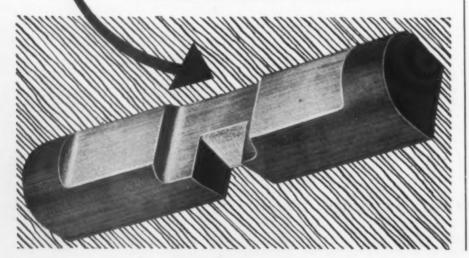
Sheets, rods, and tubes of Taylor Laminated Plastics, in various formulations, are serving industry in more ways every day. Their machineability is a paramount factor.

For a dependable source of supply for Phenol Fibre, Vulcanized Fibre, or special laminates . . . get in touch with Taylor. For fabricating service, too . . . with on-schedule deliveries . . . depend on Taylor. You'll get the kind of service that eliminates production headaches. As a starter, send a sketch or blueprint today. We'll tell you exactly what we can do for you.

TAYLOR FIBRE

LAMINATED PLASTICS: PHENOL FIBRE . VULCANIZED FIBRE Sheets, Rods, Tubes, and Fabricated Parts

NORRISTOWN, PENNA. Offices in Principal Cities . Pacific Coast Plant: LA VERNE, CAL.



COLOR MOVIE ON STAINLESS STEEL PRODUCTION

Use of oxygen and other modern techniques of electric furnace production of stainless steel is brought to the screen in full color in the latest motion picture to be released by Allegheny Ludlum Steel Corporation, Henry W. Oliver Building. Pittsburgh, Pa.

Titled "Melting and Refining of Modern Steels" the 16 m.m. movie was shot at the company's Brackenridge, Pa. plant and is a start to finish story of stainless steel as it is melted in an ultra-modern 50-ton electric furnace. Telephoto lenses were used for interior shots which make it appear that the camera was actually inside the furnace with molten metal boiling at temperatures hotter than an active volcano. Information in regard to use of the film for free showings may be obtained from the Pittsburgh office.

COLOR FILM ON CUTTER BIT GRINDING

A new 16 mm colored sound film, "Grinding and Use of Basic Lathe Tool Cutter Bits", is announced by the South Bend Lathe Works, South Bend, Indiana. It is Film No. 3 in a series of films based on the book "How to Run a Lathe".

The film shows the various steps necessary to properly grind and use cutter bits for lathe operations such as threading, facing, boring, forming, turning, cuttingoff, etc.

Other films in the series are Film I. "The Lathe", which shows that the lathe is, what the lathe is for and how its various parts work; and Film II, "Plain Turning" which shows each operation required to machine a straight cylindrical shaft between centers.

All films in the series are 10mm full color with sound track and are approximately 800 feet in length. Screen time is about 20 m nutes each. The films are available on a free loan basis, and also for outright purchase.

CINCINNATI PURCHASING DEPT. ISSUES ANNUAL REPORT

An attractive, readable "Annual Report" for 1947 has been issued by the Department of Purchasing, Cincinnati, O., and John G. Krieg, City Purchasing Agent. The 14-page report, covering the department's activities and accomplishments under the late Harry F. Wagner, City Purchasing Agent for 12 years, has an introductory memorial note to Mr. Wagner, who died on February 4, 1948.

The report describes the diversity of operations carried out by the department, the increasing scope of its activity, and many of the problems it faced and overcame during the period of rising inflation and scarcities. Clear and concise tables and charts are among the highlights of the presentation.

(Please turn to page 206)









F-HP* MOTOR-STARTING SWITCH...

New Design for improved performance

Entire new line of CR1061 manually operated switches—general purpose, water-tight, explosion-proof types—now available. New from cover to heater. Check these features for:

EASIER INSTALLATION

- All wiring terminals easily accessible on top of switch unit
- Heaters have one mounting screw fastened in position to prevent incorrect mounting—stamped with current rating

POSITIVE OVERLOAD PROTECTION

- Employs sturdy bi-metallic protective device
- Positive indication power is off as switch handle moves to OFF position on overload

LONGER LIFE

 Self servicing—wheel-type movable contact cleans as it rolls against stationary contacts

*Fractional Horsepower

 High interrupting capacity—arc snuffed quickly as silver contact recedes into recess in base
 USE . . .

On a-c up to 1 hp at 110 to 220 volts On d-c—3/4 hp 115 volt, 1/3 hp, 230 volt

double-pole forms for 1 hp, 115 to 230 volts d-c Fill in the coupon and send it in for more information. Control Division, Apparatus Dept., General Electric Company, Schenectady 5, N. Y.

> Apparatus Dept., Sec. K676-276 General Electric Company Schenectady 5, N. Y.

Gentlemen

I want to know more about your new CR1061 switches. Please send me Bulletin GEA-2234E.

NAME.....

COMPANY.

ADDRESS

GENERAL # ELECTRIC

Check An-cor-lox

before you pick a lock nut...

If you haven't given An-cor-lox a trial, DO IT, before you pick a nut that has fewer advantages. An-cor-lox nuts are VERSATILE... They can be used where other lock nuts are impractical. For example:



- Locking device on the bottom permits a short stud.
- Cap nuts, thin nuts and spanner nuts are all available.
- Wide choice of materials and finishes for resistance to corrosion, heat and severe atmospheric conditions.
- The locking device fits snugly against the work, forming a pressure seal.

DON'T select your lock nut until you've tested An-cor-lox. Write to us today for descriptive material and free standard samples to fit your application.

An-cor-lox

Lock Nuts

LAMINATED SHIM COMPANY, Inc. An-cor-lox Division, 2410 Union Street Glenbrook, Conn.

AN-COR-LOX NUTS . SHIMS . SHIM STOCK . STAMPINGS

80
Oakite
Materials
to solve
your cleaning
problems

NEW quarternary ammonium compound — better 2 ways!

IT'S Oakite Sanitizer No. 1, specially designed for sure, swift anti-bacteria treatment. It quickly kills bacteria—and it's better these two ways: First, it sustains germicidal potency longer. Second, it costs less thanks to highly concentrated form.

Used in recommended dilutions, new Oakite Sanitizer No. 1 is virtually odorless, tasteless, non-toxic. It's non-corrosive; won't hurt rubber. Non-irritating. Stores without potency loss. Use it for all-purpose sanitizing and for discouraging slime growth in humidifying systems. Use it to destroy bacteria; to inhibit mold. Comes in handy gallon containers. Facts FREE in "Questions and Answers About Oakite Sanitizer No. 1". Send to Oakite Products, Inc., 54 Thames St., N. Y. for your gratis copy!



MATERIALS METHODS SERVICE

Specialized Industrial Cleaning

Technical Service Representatives in Principal Cities of U.S. & C.

OFFICER RANK OPEN TO PURCHASING SPECIALISTS

Civilians, possessing either professional or technical qualifications which are critically essential and immediately adaptable to the needs of the Army, may get direct appointments in the Officers' Reserve Corps according to a new policy outlined recently by the Department of the Army.

Such specialties as purchasing, storage, distribution, various branches of engineering, and printing are included in a list of seventy-five varied fields from which specialists will be commissioned.

This system is intended to provide a continuing source of officers experienced in fields in which it is not feasible or economical for the Army to give training. The establishment of standards under the new policy opens the way for those who previously applied for direct commission in specialist fields to resubmit their applications.

Interested individuals may obtain further details by addressing the nearest organized Reserve Corps unit instructor in the area in which they live.

GENERAL ELECTRIC'S STEEL BILL INCREASED \$8,000,000 ANNUALLY

1 1 1

The recent change-over from the "basing point" system of pricing steel, together with increased freight costs, and the price increases recently announced by steel manufacturers, have added an estimated \$8,000,000 to the General Electric Company's annual steel bill, according to Harry L. Erlicher, G-E vice president in charge of purchasing and traffic, Schenectady, N. Y.

The change from the "basing point" system to "f.o.b. mill" pricing because of the Supreme Court Decision in the recent Cement Case, alone will cost the company more than a half-million dollars annually, he said.

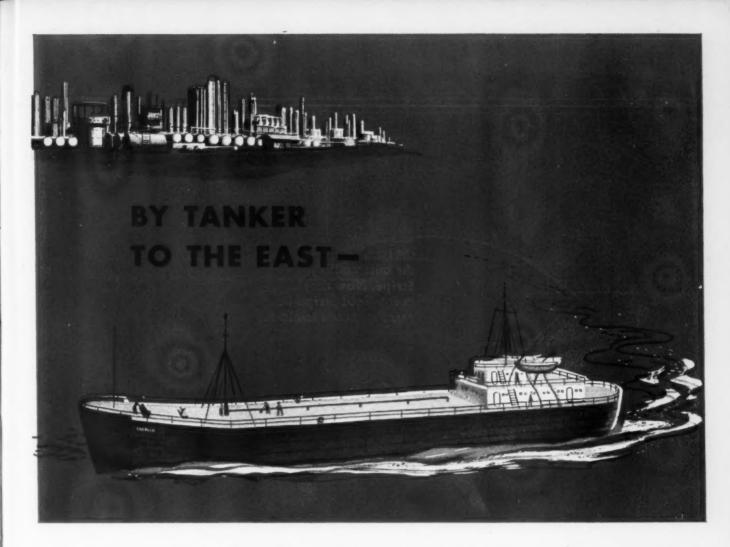
The price increases in the in tial cost of steel, he continued, are responsible for the largest jump in the G-E steel bill, while freight rates have risen about 30 per cent since fall.

Steel, one of the key commodities of the nation's economy, is used by General Electric in hundreds of products and in quantities of hundreds of thousands of tons each year, Mr. Erlicher pointed out. He cited the example of large turbine-generators, one of which may weigh nearly a million pounds, and which is made almost entirely of steel and copper.

Steel and many other metals used in quantity by the electrical industry are still in "critically short supply", and prices of many metals recently were increased several per cent, he said. Aluminum, lead, and zinc are among the metals which are critically needed, he added.

Mr. Erlicher, who recently was named consultant to the Bureau of Federal Supply, as an advisor on the purchase of critical materials for stockpiling purposes, estimated that the supply of some metals, notably aluminum and steel, will not become adequate for several years.

(Please turn to page 210)



CELANESE* FORMALDEHYDE

Supplementing nation wide deliveries of Celanese Chemicals by rail from the Chemcel plant at Bishop, Texas, Celanese is now operating the first tanker facilities for the shipment of formaldehyde. This new service provides eastern industries with additional quantities of both inhibited and uninhibited grades of this important basic commodity.

From new Celanese storage facilities at Corpus Christi, Texas, a tanker is now regularly carrying formaldehyde eastward to New Haven, Connecticut in specially insulated stainless steel compartments. From the New Haven terminal, with a storage capacity of more than 7,000,000 pounds, Celanese offers prompt deliveries of formaldehyde to Eastern consumers.

During every step of the way—from Chemcel to your plant door—the quality of Celanese* Formaldehyde is maintained at USP standards. A well equipped control laboratory at the New Haven terminal assures deliveries of the highest quality product.

CELANESE CORPORATION OF AMERICA Chemical Division 180 Madison Avenue, New York 16



ALCOHOLS · ALDEHYDES · GLYCOLS · KETONES · ACIDS · SOLVENTS · PLASTICIZERS

OCTOBER, 1948

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TOP PERFORMANCE!

makes GOLD STRIPE the choice of Purchasing Agents across the nation . . .

because Gold Stripe Brushes are designed by master craftsmen-for those who want only the best. Smart P. A.'s long ago discovered the outstanding economy values of Gold Stripe. Now they'll have nothing else, because Gold Stripe brushes keep maintenance costs at a minimum.





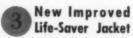
Riveted Stainless Steel Ferrules

Keeps Gold Stripe Brushes stronger longer and spreads economy-keeps maintenance cost down.



Perfect Balance Machined Hard-**Wood Handles**

Makes a balanced brush-reduces arm and wrist strain-increases painter's efficiency.



Keeps your Gold Stripe lively, straight and clean. Saves the life of the brush.

Today's Gold Stripes are better than ever. Their outstanding qualities represent the ultimate in brush-making skill. Gold Stripe brushes are unsurpassed for long life, efficiency and economy. Order today and start to enjoy the "plus values" of Gold Stripe-"the distinctive mark of America's Finest Paint Brush." There are 144 conveniently located Pittsburgh Branches to serve you.



sold Stripe BRUSHES

Put it up to a

NATIONAL

to Cut Costly **Damage Claims**



Assure safe Delivery of Cartons thru *AIIits go down the re in poor was

*AUTOMATIC MOISTENING

will and profits go down the drain if cartons and contents arrive in poor condition or worse! And industry's bill was \$200,000,000 in '47 in damage claims! How about your shipping room? You can assure perfect closure every time by putting a NATIONAL TAYPER on the job. It automatically dispenses tape that stays put because it's never too wet or too dry at ends, middle or any part.

POSITIVE AUTOMATIC CONTROL does itassures the right sealing lengths too, prevents waste, saves up to 50% on tape. And what speed when the pressure's on! For added protection, investigate Nashua's printed ITSTIX tape. It identifies your package while safeguarding against pilfering. Get the facts on Nashua's complete protection "package" in machines, tape and service today. Mail coupon below.

*Endorsed by the Association of American Railroads and the Gummed Industries Association, Inc.



SEAL IT RIGHT WITH GUMMED TAPE

Please send more facts on Nashua's 3-Point Program for Safe Arrival At Destination.

Name Company Address

Остовев, 1948

209





- Coal-dust in the boiler room, dirt on machinery, filings around a lathe, lint on the walls—EXIDUST gets them all. This central vacuum system supplies cleaning suction so powerful it can pick up nuts and bolts . . . "heavy" dirt doesn't have a chance.
- EXIDUST's strong vacuum is piped to convenient spots throughout the plant or building—and flexible hose connections, with nozzles for every kind of cleaning job, give fast and effective cleaning to every surface. The ample, efficient separator in the basement removes all dust from the air—makes recovery easy of salvageable waste.
- EXIDUST cleaning is effective—efficient—economical.
 For free booklet, mail this coupon today.

415 La	mi					y i	16	u	84		1	0	P	ŧ.	9	ſ,					
☐ Pie Vacuum								01	3	E	X	11	0	U	S	T	C	•	n	tr	8
Portable									01	N	a	bo	24	ıt	E)	(1	0	ı	JS	
Name		,,	*	 *			 *														

NEW A. S. A. SAFETY CODE FOR PRESS OPERATORS

Nine years of experience have been drawn upon in preparing a completely revised edition of the American Standard safety code for the protection of emple gees using power presses and foot and hand presses, copies of which are now available. This revision of the 1937 edition was prepared by a nationally representative sectional committee organized under the procedure of the American Standards Association and sponsored by the National Safety Council.

It includes up-to-date nationally acceptable recommendations for safe installation of power presses, as well as a wide variety of guards and feeding methods for all types of power presses and foot and hand presses. It also makes recommendations for safe operating conditions.

Copies of the American Standard Safety Code for Power Presses and Foot and Hand Presses (B11.1-1948) may be obtained from the American Standards Association, 70 East 45th Street, New York 17, N. Y., at \$1.25.

ANNOUNCE LIST OF 30 MATERIALS ESSENTIAL TO STOCKPILING FOR SECURITY

A list of 30 strategic materials, essential to stockpiling for the nation's military security, was made public recently by Earl Bunting, Managing Director of the National Association of Manufacturers, which is cooperating with the Munitions Board in accelerating the stockpiling program.

The names of the items at present most critical to stockpiling were released by authorization of Rear Admiral Roger W. Paine, deputy executive chairman of the Munitions Board, Mr. Bunting said, "to clear up confusion and speculation as to what the government needs, and to help industry aid more effectively."

On the list, not necessarily in order of importance, are rubber, lead, castor oil, cadmium, coconut oil, copper, manganese, palm oil, quinidine, shellac, zinc, cordage fibers, mica, asbestos, bauxite, beryl, b'smuth, chromite, columbite, corundum, industrial diamonds, graphite, kyanite, monazite, nickel, pepper, talc, tin, tungsten and vanadium.

Under the industry-assistance plan, formulated by Thomas J. Hargrave, Munitions Board chairman, and Mr. Bunting, procurement of the critical items will be stepped up through the cooperation of industries which import, produce or process the needed materials. These industries are being asked to obtain for the government a certain percentage in excess of their normal supply.

Specific information concerning the amount of each material required for immediate or long-term stockpile purchase has been forwarded to the trade association representing industrial users of the material in question.

In cases where users of the materials cannot be kept informed through trade groups, individual firms will be approached

(Please turn to page 212)

Introducing... a"NEW LOOK"



CESCO's Spec-lite Goggles

Approved with Enthusiasm!

• The Cesco Spec-lite is new, different and improved—with 6 outstanding features: 1) Lightweight, sturdy construction—weighs but 1 oz., supported by durable metal frame; 2) New-type forehead rest plus balanced temple suspension—goggle virtually floats in position; 3) Quick adjustability for correct fit on various faces; 4) One-piece plastic lens, quickly replaceable, distortion-free; 5) Modern, snug-fitting comfortable temples; 6) Low first cost, low upkeep.

CESCO's Spec-lites Ideal for many Safety Purposes!



• This Cesco Spec-lite is actually an eye shield—protects entire eye area from sparks, light impacts and other hazards. It can be worn with or without personal glasses. Available with either clear or glare-reducing green plastic lenses.

If you haven't seen the new CESCO Spec-lite Goggle, be sure to do so.

CHICAGO EYE SHIELD COMPANY

2320 Warren Boulevard Chicago 12, Illinois



Udylite Research

... ever at work, in your service

Research, at Udylite, is as continuing as the clock. Over the years, the search for the "new and better way" has been as scheduled and definite an endeavor as our manufacture of plating machines and supplies.

From this have come such time-saving, qual-

ity-improving, cost-cutting developments as the famed Udylite Bright Nickel Process (which increases plating speed as high as 50%)... the Udylite Cadmium Process (the foundation of our company and first discovered by Marvin Udy)... and many other important plating process improvements.

Equally important is the availability of Udylite's unmatched laboratory facilities

and expert technical staff to help you quickly solve troublesome metal finishing problems.

Our electrochemical engineers will recommend the type of solution to



be used, the best operating cycle and the ideal operating conditions for best results.

Our technical field service engineers will supervise the preparation and purification of solutions... assist in starting and adjusting processes. Udylite engineers will also instruct

your personnel in the proper operation.

In our headquarters control laboratory, your solutions will be tested without cost. Our complete Pilot Plant in Detroit makes possible thorough pre-testing of processes. Our engineers will design an entire plant for you, with accent on maximum efficiency.

All this is a part of Udylite Research...

continuous research that is available at all times to Udylite customers. For better plating—faster—at lower cost—and with maximum profit to you—always depend upon Udylite.

Pioneer of a better way in plating



Detroit 11, Michigan . Offices in Principal Cities



NG



All Blade finishes now Black except Molders' Shovels which may be furnished with either face or back polished.

A "Good Buy" in SHOVELS!

That's what you get when you specify . . .

INGERSOLL Shovels

One reason they are such a "good buy" is that their blades are made of TEM-CROSS Steel . . . guaranteed not to split at the blade edges. You get this extra value and better service without paying a premium for it.

So whenever you order Shovels, be sure to specify "Ingersoll"—"A Borg-Warner Product."

INGERSOLL STEEL DIVISION

Borg-Warner Corporation NEW CASTLE, INDIANA

Plants: New Castle, Ind.; Chicago, III.; Kalamazoo, Mich.



NUTS BRASS and ALUMINUM

MILLED FROM
THE BAR
(NOT PUNCHED)
SIZES 2 TO 12

AND 1/4"

DORIC

MANUFACTURING CO.

294 W. EXCHANGE ST. PROVIDENCE 3, R. I.

Simplex-Jenny CENTER-HOLE HYDRAULIC PULLER



Makes Tough Pulling Jobs Easy

Does a wide variety of tough pulling, pushing and lifting jobs in minutes instead of hours. Center-hole construction makes the Simplex-Jenny its ownback-up. Easily rigged up as a portable press or used as a conventional jack. Operates vertically or horizontally without side thrust or friction. Five

models—30 to 100 tons all self-contained and light in weight for their capacity. Write for Bulletin 44J.

TEMPLETON, KENLY & CO. 1014 South Central Avenue Chicago 44, Illinois

> Simplex Jacks

(Continued from page 210)

by Mr. Bunting for discussion of methods of cooperation with the stockpiling program.

Required amounts of the materials vary considerably, Mr. Bunting said, but as an average represent a "very small percentage of the national production each year." No significant inflationary effect is anticipated from the stockpiling, he added, emphasizing that purchase of the materials in an orderly fashion, by men accustomed to buying and processing them, should eliminate any disturbing competitive bidding for the products in the world markets, on the part of government and industry.

While a total of 67 materials are included in the "Group A" list of stockpile items, the Munitions Board requested industry action at this time only on the 30 items announced today. "Group A," according to the Munitions Board, comprises those strategic items for which stockpiling "is deemed the only satisfactory means of insuring an adequate supply for a future emergency."

Strategic and critical materials grouped as "B" and "C" are recommended for stockpiling only under certain conditions, governed in part by adequacy of supply and practicability of storage. The Munitions Board notes that "materials in all three groups are subject to constant surveil'ance and review."

U. S. RUBBER PRODUCES NEW DECORATIVE MATERIAL

United States Rubber Company, Rockefeller Center, New York, N. Y., is now producing in quantity a new type of decorative material, suitable for both horizontal and vertical surfaces. The material is an outgrowth of large scale war production, combining fabrics and plastics, which was widely used in war planes. Since World War II, a commercial modification of it has been manufactured for a broad range of civilian installation. Among the important uses foreseen, as a result of these installations, are wall covering in rooms and corridors, furniture surfacing, and tops for tables, counters and desks.

Known as Satusply, the material is now being produced in 34 different colors and patterns, with gloss or satin finish. A cigarette-proof type is available in all colors, designs and finishes. It is made in continuous rolls and in several widths and thicknesses. Standard length of roll of the cigarette-proof type is 60 lineal feet and of the non-cigarette-proof type is 90 lineal feet.

In producing Satusply, paper or cloth is completely impregnated and surfaced with a polyester thermosetting resin, then processed under heat and tension. Color and design possibilities are almost unlimited, since a variety of papers or cloths in plain colors, or in designs, can be used as a base. Degree of stiffness can also be controlled during manufacture.

The protective coating formed by the resin makes the non-porous plastic material washable, highly resistant to stains, acids, alkalies and wear.



makes a hit

Powered by compressed air, this new invention will throw a baseball faster and more accurately than any human can. It can be adjusted to pitch 8 different curves, and will groove the plate every time, at the exact height desired. Eagerly adopted by major league ball clubs, this mechanical pitcher even takes on batting chores—when set up over home plate, it will lay down a 400 foot fungo in any direction.

The barrel, curve adapter and air chamber of this "iron man" are seamless steel tubes. The barrel bore is required to fit a baseball without seizing, yet tightly enough to prevent loss of compressed air power while firing. Despite this unusual specification, tubing of the required size is regularly supplied—right out of Frasse warehouse stock.

You're invited to be choosey when you work with Frasse tubing stocks. Sizes in mechanical tubing range from a convenient $\frac{3}{32}$ " to $10\frac{1}{2}$ " O.D.—and unusually complete inventories are equally handy in stainless tubing, aircraft tubes and condenser and pressure tubes. What are your requirements? Peter A. FRASSE and Co., Inc., 17 Grand Street, New York 13, N. Y. (Walker 5-2200) • 3911 Wissahickon Avenue, Philadelphia 29, Pa. (Baldwin 9-9900) • 50 Exchange Street, Buffalo 3, N. Y. (Washington 2000) • Jersey City • Syracuse • Hartford • Rochester • Baltimore

for Steel Tubing

Seamless and Welded Mechanical Pressure and Condenser Tubes Stainless Tube, Pipe and Fittings Tubing to Aircraft Specification

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- Champion Fluorescent and Incandescent Lamp Quality. When you standardize on lamps bearing the Champion diamond mark you can be certain of the best light for your money. Champion Lamps are guaranteed to equal or exceed Federal Specifications backed by one of the oldest and largest manufacturers in the business.
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Let us mail you a copy of the Champion Maintenance Manual H. It's full of useful hints on how to make the most of planned lighting.

CHAMPION LAMP WORKS

Lynn, Massachusetts



METAL BONDING FILM WITH HIGH SHEAR RESISTANCE

An unsupported film of pure adhesive that provides a metal-to-metal bond that is resistant to shear tests up to 3500 lbs. per square inch has been announced by Minnesota Mining & Manufacturing Co., 900 Fauquier Ave., St. Paul, Minn.

Known as "Scotch-Weld" Bonding Film, it is transparent, roughly resembles cellophane in appearance, is provided in rolls like tape and is not tacky to the touch. It is 100% adhesive, with no supporting material in the film. The film is placed between units to be bonded and is cured by simultaneous application of heat and pressure.



Non-tacky bonding film of great

Manufacturer's tests reveal shear strengths to 3500 lbs. per square inch in bonding .064" aluminum Alclad to itself. In bonding the same metal to fibre, wood and plastic surfaces, the non-metallic materials delaminated at 880, 1770 and 2800 lbs. per square inch respectively. The adhesive d'd not fail.

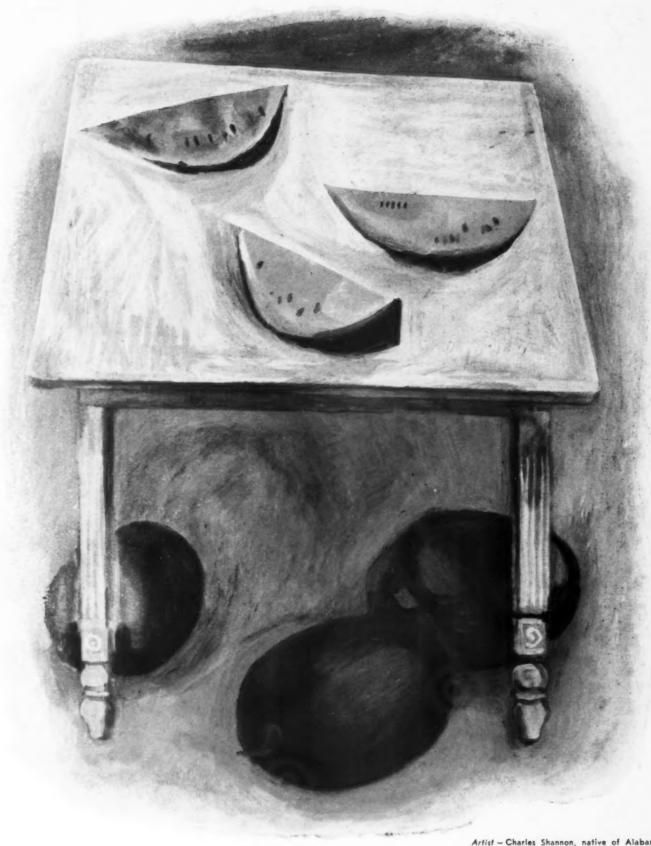
MANUAL ON MATERIALS HANDLING

Publication of "Some Basic Techniques in Material Handling," a report of the proceedings at technical sessions of the Conference on Materials Handling, in Cleveland, last January, is announced by Clapp & Poliak, Inc., 350 Fifth Avenue, New York, N. Y., management of the materials handling exposition which was held concurrently with the conference.

The book is believed to be the first report of its nature ever published and one of the few texts on materials handling problems. Nineteen papers are included. The book contains 84 pages, 8½ x 11, is paper covered, and includes 15 pictures, 11 diagrams, and four charts and tables. The price is \$1.00.

Among the papers are "Making a Materials Handling Survey," "Planning a Storeroom Operation," "Planning the Pallet System," Determining Pallet Sizes," "Planned Packaging for Efficient Handling," "Factors lin Materials Handling Investment Decisions," "Should Materials Handling Equipment be Standardized," "Loss and Damage Prevention through Improved Materials Handling,"—and "Integrating the Use of Different Types of Handling Equipment."

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EVERY MONTH IN
PURCHASING'S CLASSIFIED
SECTION! SEE PAGE 344

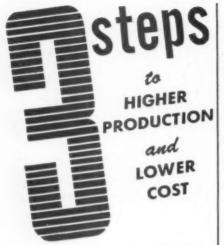


Artist - Charles Shannon, native of Alabama

 ${\bf ALABAMA}-annual\ purchases:\ \$\,1^2\!/_3\ billion-mostly\ packaged.$

CONTAINER CORPORATION OF AMERICA













ELYRIA OHIO

HAVE YOU MET THIS SALESMAN?

"When we asked a crack salesman recently what his formula was for success, he replied, 'I have no set formula. I just happen to like selling. I get a kick out of it-a good sale thrills me. There is a challenge in meeting competitions and overcoming sale resistance. To me, selling is a game, and like any game, the more you know about it, the better your chances are of winn ng. If I have any formula for winning sales, it may be this:

"I have made a thorough study of the things I sell. I know how they function. I can answer questions about them intelligently. I know what they will do and how they do it; further, I also know what they cannot do-that is important.

"I know the kinds of people who can use my merchandise. Indeed I know as much about those who are possible prospects as about the articles themselves. I have studied different communities and types of men with reference to what I sell. In short, I know what I am selling and selling what I know." National Blank Book Com-

STAINLESS STEEL USE GAINS AFTER EXTENSIVE RESEARCH

The use of stainless and heat resisting steels has recently been increasing rapidly acording to the American Iron and Steel

Nine years ago production in the United States of these steels, which are the fruits of modern metal science and the craftsmanship of steel producers, totaled 180,000 tons of ingots. In 1947 the output in the United States was approximately 520,000 tons of ingots. Last year production of stainless steel finished products set a record at 333,-000 tons.

The creation of the modern stainless and heat resistant steels is connected with the long and intensive search for steels to withstand many kinds of corrosive attack, to retain sufficient strength over wide ranges of temperatures, and to permit fabrication of the steels into desired products.

One of the early stainless steels was a by-product of cannon research! Attempts to make better cannon linings from steel containing chromium led to the discovery of chromium's remarkable property of rendering iron and steel rustless or stainless. During a laboratory investigation of these linings in 1913, the English metalurgist, Harry Brearley, observed their resistance to attack by various reagents.

Sensing a discovery of unusual importance, Brearley, who died recently, suggested the use of the new steel for cutlery.

After years of research, knives made from steel containing about 12 per cent chromium and 0.30 per cent carbon were developed which took and held a sharp edge and resisted corrosion. Additional research revealed that a tight self-healing protective film of chromium-iron oxide on the knife makes it "stainless." The protective oxide is so thin and transparent that it escapes detection by the unaided eye. When scratched, nicked, worn through or

(Please turn to page 218)

ARMSTRONG DROP FORGED "C" CLAMPS

ARMSTRONG
"C" Clamps
"C" Clamps in
design, steels, "C" Clamps in design, steels, heat treating, and accuracy of machining are high quality tools. Screws are of special analysis steel with close fitting thread hardened points or free action swivel. They are handier and absolutely dependable. Standardize on Standardize on ARMSTRONG Drop Forged Clamps.





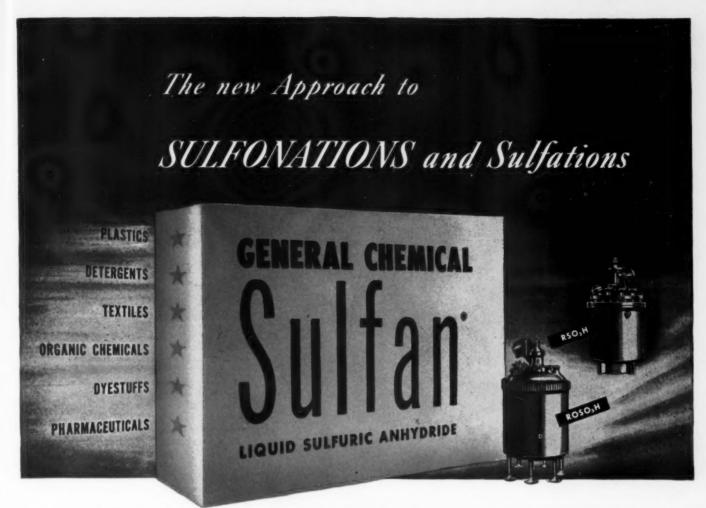


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Less than twelve months ago General Chemical Research introduced SUL-FAN—Stabilized Sulfuric Anhydride—to the Process Industries. Even in that short space of time, many using SULFAN have predicted it may well "rewrite the book on sulfonation and sulfation!"

Important among the many reasons for this belief is the fact that SULFAN provides Sulfur Trioxide in stable, easy-to-use liquid form for the first time in chemical history. In sulfations as well as in both mono- and poly-sulfonations, it offers multiple advantages:

- Eliminates costly, time-consuming neutralization and washing steps.
- Shortens processing time.
- Produces salt-free products.
- Obviates waste acid disposal.

Already finding a place in the textile, dyestuff, detergent, pharmaceutical, plastics and general organic chemical industries, SULFAN may hold a rich potential for your operations, too. Write for samples or commercial quantities.

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Available on request on business letterhead.

SULFAN—General Chemical Technical Bulletin SF-1 containing 16 pages of charts, graphs, other data on Sulfan.

Reactions of SO₃—Comprehensive, selected abstracts and bibliography compiled by General Chemical Research.

Research and Development Department

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For work on metals, alloys, wood, plastics, stone, horn, bone, etc. Plugs in any AC or DC socket.

HANDEE 44

A good production tool. Has everything — speed, power, versatility and pencil-point precision. Constantly cooled by forced air, the 44 runs cool and smooth all day long. Weighs 2 lbs., 8½" long, 20,000 r.p.m. \$31.50. In wood carrying case with accessories \$42.50.



A big fellow. Fast, powerful, sturdy, for continuous work. Has ample power to drive a 2½" diameter wheel. Weighs 3 lbs., 10" long, 17,000 r.p.m. In case with assortment of accessories \$42.50.

HANDEE

First tool of this type and today's finest. For precision work. Also gets into hard-to-reach places to make repairs on machinery. Weighs 12 oz. 6½" long. 25,000 r.p.m. With 7 accessories \$20.50. Handee with 40 accessories in carrying case \$27.50.

The Control of

CHICAGO ACCESSORIES

Grinding and mounted wheels, sanders, steel cutters, etc.—the most complete line to fit any power tool—over 500 of finest quality—all made in our own plant.

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(Continued from page 216)

otherwise penetrated, a fresh protective film forms practically instantaneously.

Chromium is an important constituent of every stainless and heat resisting steel. It strengthens steel and increases its corrosion resistance.

Various combinations of any of 17 other elements may be present in modern stainless and heat resisting steels. These are aluminum, carbon, columbium, copper, iron, manganese, molybdenum, nickel, n'trogen, phosphorus, selenium, silicon, sulphur, titanium, tungsten, vanadium and zirconium. Not all of these are intentionally present in any individual stainless or heat resisting steel. But each of such steels requires at least four of these elements and several series require six.

MOBILE GAS TURBINE ELECTRIC POWER PLANTS

A long-standing need of power utilities and industry using power for a compact, easily moved, short-notice source of emergency electric current may be filled within the next few years by mobile gas turbine plants now under development by Allis-Chalmers engineers.

Studies have already been made of 3000 and 6000 kw units to be mounted on rail-way trucks for rapid movement over normal railway track or comparatively irregular freight and utility yard tracks, Allis-Chalmers reports. The proposed units could be synchronized with an existing power system.

Simplicity, extremely smooth operation and no requirement for water would characterize the gas turbine plants. Operating on oil, the units would require only fuel line connections to tank cars to storage tanks, in addition to the electric transmission line connection.

The prime mover of the 3000 kw unit operates on the simple gas turbine cycle with regenerator. With an inlet temperature of 1300 F, the unit would have a fuel-bus efficiency of about 23 percent at full load. Mounted on eight carrying axles arranged in four standard freight car trucks, the power plant would weigh approximately 230,000 pounds. Sufficient oiltank space is built into the unit to permit full load operation for at least six hours.

The turbine unit is coupled to a 3600 rpm generator through a reduction gear. All working air for the gas turbine plant and cooling air for the generator is taken in through filters in the side walls of the cab. All electrical equipment and synchronizing apparatus is built into the cab.

General arrangement of the more powerful 6000 kw, 3600 rpm unit is identical to the smaller power plant, except that the inlet temperature is 1150 F, and a gear will not be necessary. Efficiency will be approximately 21 percent. Total weight would be about 500,000 pounds, with tanks loaded for eight hours operation and the unit ready for service. If a higher efficiency unit with limited life is desirable, the 6000 kw size gas turbine can be built for 1300 F gas inlet temperature, in which

(Please turn to page 222)



First cost is often a minor matter.

Equipment made of Allegheny Metal lasts and keeps its beauty for a lifetime—

cuts maintenance and depreciation costs to the bone. This pioneer stainless steel is really cheapest in the long run—and it's promptly available to your needs.

Complete technical and fabricating data—engineering help, too—yours for the asking.

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It's DIFFERENT!..

SAVES 80% OF MAINTENANCE COSTS



FERENCES you can see in the Motor ... and in your Cost Sheets

OUTSIDE FINS DISSIPATE HEAT LIKE A RADIATOR!



To get heat away from a Sealedpower motor Crocker-Wheeler applies the proved principles of your home radiator. Actually, the graceful outside fins that identify

this motor add over 150% more area to "give off" damaging heat! Only a C-W Sealedpower motor has these external fins. A common-sense reason why it runs cooler, longer.

INTERIOR HAS NO "OVEN" TO KEEP IN HEAT!



Double walls are essential to hold heat in an oven. Not so good in a motor where the problem is to let heat escape. An oven is an unhealthy place to keep insulation on motor windings. So there's plenty of cooling-sense in the Sealedpower

design that eliminates the conventional extra outside wall around the housing . . . without sacrificing protection. No motor of its type is more effectively sealed against airborne dirt, oil, moisture and fumes!

NO PLACE FOR A HEAT-HOLDING BLANKET TO BUILD UP!



When lint or dirt collects between the outside wall and the housing of a conventional enclosed motor, you get the general effect of the insulating blanket between the walls of

your house. It bolds heat in. Without a double-wall, and with all dirt sealed out, a Sealedpower motor keeps cooler because it keeps cleaner, especially on dirty jobs!

KEEPS CLEANER . . . ELIMINATES 2 OUT OF 3 CLEANINGS!



In normal (not extra dirty) service a conventional enclosed motor requires cleaning every year, say maintenance chiefs. A Sealedpower needs it only every three years! Where lint or dirt is excessive, the conventional type often should be

cleaned every 3 months, while a Sealedpower motor will need it only every 18 months!

And, to clean a Sealedpower used in normal service only 2 simple operations are involved . . . taking only 15 minutes, without a shutdown. It's a money-saving cinch! Just compare it with the job of cleaning the conventional type, requiring as many as 17 operations and a 3 hour shutdown. See why a Sealedpower motor saves 80% and more of maintenance costs!

You get dollar-saving design only when you specify C-W Sealedpower for totally-enclosed, fan-cooled motors. Specify the different Sealedpower motor... with a rugged, rust and corrosion resisting cast iron frame...in ratings from 3 to 40 hp, horizontal or vertical, with NEMA "C" face, "B" or "D" flange mountings. Many ratings are stocked...see C-W's weekly Stock Sheet.

FOR ANY APPLICATION WHERE EXCESSIVE MAINTENANCE IS INDICATED - specify SEALEDPOWER and SAVE









Direct Current Motors



Generators



Flexible Couplings

DOLLAR SAVER!

150% MORE

is provided by the radiating fins, exclusive with the C-W SEALEDPOWER. Here, fluttering streamers trace the fan-driven airstream that blows dust and fumes outside and away.





Before You Buy ANY totally-enclosed motor, be sure to read why SEALEDPOWER will prove a "maintenance miser" for you. This new booklet, "It's Different—it's a Dollar-saver," is packed with facts no savingsminded motor user can afford to overlook. Write for it.

Crocker-Wheeler Electric Mfg. Co. Ampere 3, N. J.

Company

Send the SEALEDPOWER Motor Booklet, "It's Different - it's a Dollar-Saver".

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Title or Function

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LAMSON CONVEYORS

SAVE wasted effort ... handling time . . . and floor space.

SPEED flow of materials for greater production.

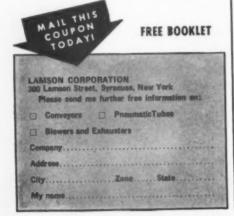
- It's a fact. Materials-handling costs actually eat up to 30% of your manufacturing dollar. And — there's nothing to show for it in your finished product.
- That for management is a tough headache.
- But this is also an incontrovertible fact. Lamson Conveyors have drastically cut materials-handling costs in thousands of plants. (The Westinghouse Plant above is only one.) They can do the same for you.

For Greater Savings — LAMSON Pneumatic Tubes

 Coordinate flow of papers with the flow of materials on Lamson Conveyors. Save costly messenger service . . speed flow of mail, telegrams, requisitions, small tools, samples, and blueprints.

In One Plant Alone LAMSON TUBES Saved \$150,000 in one year

The ALLEN-BILLMYRE DIVISION of Lamson Corperation supplies single and multistage blowers and exhausters for all industrial uses. ½ to 200 HP: ½ to 8 lbs. Pressure, 25 ts 15,000 C.F.M.



(Continued from page 218)

case the efficiency would be 23 percent and the generator output would be increased to 7500 kw.

Standard draft gear and air brakes would permit these power plants to be moved in freight trains. The regenerator and the air exhaust stacks for generator and regenerator must be removed for standard clearance.

The mobile gas turbine plants appear to be a very promising source of extra power which can be made available within a few hours. Where regular power plants are out of operation when a disaster strikes, such units could be located on a rail siding from where they could very quickly deliver power.

Similarly, industrial plants faced with a sudden temporary need for extra power could put a mobile power plant into operation, to avoid the expense and time involved in construction of a powerhouse. It could also provide emergency service during service shutdowns or turbine failure.

INDUSTRIAL USE OF ATOM NOT "AROUND THE CORNER"

The real significance of the atomic energy discoveries is that they promise the most powerful levers ever known to pry open the doors of fundamental knowledge, declares David E. Lilienthal, chairman of the United States Atomic Energy Commission, in Industry Tomorrow, monthly bulletin of Morris and Van Wormer, engineers.

Writing on "Atomic Energy and American Industry," Mr. Lilienthal asserts that the commercially-feasible atomic power plant is "not just around the corner, or around two corners." The long term prospects for the industrial application of nuclear fission developments are bright, however.

"There is no reason to expect that an atomic energy industry will spring into being overnight," Mr. Lilienthal writes. "As it develops, it will almost certainly follow the course of supplementing rather than supplanting existing economical sources of power. Our judgment is that no one should delay sound and economical additions to power supply, whether by fuel-generated electricity or water power, because of hope or fear of atomic energy as a future source of power. There will be ample time to make whatever adjustments are needed."

It is the Commission's policy, Mr. Lilienthal points out, to keep American engineering and industry informed of developments in the field as closely as is consistent with security factors. So far as practical, the development of atomic energy for peaceful use is to be carried out by private industry as agents and contractors of the government. "We want this enterprise to enlist a widening area of our economy so that progress will be rapid and effective, and so that when an atomic industry is left to grow by itself it will not find that it has been planted in shallow soil."

(Please turn to page 224)

Goes to the SOURCE of BAD SMELLS!

F&E

DISINFECTS WHILE DEODORIZING

F&E kills many types of putrefactive bacteria — the source of disgusting odors.

At the same time it transforms noxious vapors into a pleasant agreeable atmosphere tinged with the invigorating scent of eucalyptus.

Use F&E Solution

around toilets and urinals

. . . for flushing garbage

receptacles and sick room accessories...for dressing

room benches and lockers

. . . wherever agreeable,

high-speed deodorization is required.

Write for Folder FE-F745

THE C. B. DOLGE CO.
WESTPORT, CONNECTICUT



REMARKABLE PRODUCTION RECORDS ACHIEVED BY USE OF THE CITIES SERVICE "HEAT PROVER"

How Much would it be worth to your plant to know exactly how much of your dollar spent for fuel is wasted? Unquestionably it would be worth a lot to you in total costs... in greater productive capacity and in greater all-around efficiency.

A free analysis of your heating operations

is yours for the asking. A Cities Service Combustion Engineer can tell you the whole story quickly and accurately in one examination. Using the Cities Service "Heat Prover," he will show you how much fuel is wasted unburned...how much is wasted in uselessly heating excess air.

This instrument is designed for use on industrial furnaces of every type, regardless of the fuel used. It is also valuable when used for diesel and gas engine exhaust analysis.

There is no charge, no obligation; and no commitments made by you for this service. Write today for a demonstration.



FREE: A fact-filled booklet entitled "Combustion Control for Industry." Write Cities Service Oil Company, 60 Wall Tower, Room 236, New York City, N. Y.

CITIES (SERVICE



This electrically heated rubber pad has reduced the time required for re-soling shoes in the famous Lamac Press by as much as 75%.

Continental made this improvement possible because it was able to develop a rubber compound that would withstand the intense heat generated by the electrical heating element. Continental also solved the equally difficult problem of positioning this heating element so that it would not shift and "short" itself when the pad was molded.

The success of this development is another example of the specialized assistance in rubber which Continental offers to design and production engineers.

elf You Have Rubber Problems, Send for This Helpful Booklet.

Three minutes' reading time will give you a new conception of the assistance you can gain by consulting specialists in rubber. Just ask your secretary to write for a copy today.



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GREATER SAFETY IN THE DARK

Power failure used to be a very serious safety hazard in hotels, hospitals and other institutions, in theaters and night clubs, and wherever else people are gathered under conditions where a power failure may cause panic.

Now, with phosphorescent or so-called "luminous" safety signs available to mark all exits and fire escapes, this hazard can be eliminated. These glowing signs are visible in total darkness long after the usefulness of ordinary signs has ceased, and they serve as ordinary signs in bright light or daylight.



The illustration shows "glowing" safety signs installed in New Jersey hotel by the Nulite Displays Company, 15 East 26th street, New York, N. Y.

In addition, hallway markers can be used to point to exits and fire escapes, to fire hose and to other fire fighting equipment, first aid stations, and other vital points in a building or plant.

The illustration shows "glowing" safety signs installed in New Jersey hotel by the Nulite Displays Company, 15 East 26th Street, New York, N. Y.

WESTERN HEMISPHERE FIBRE HELPS OVERCOME SHORTAGE

Increased production cordage fibers in the western hemisphere as a result of wartime development was hailed by Col. S. W. Metcalf, president of the Columbian Rope Company, as an important factor in the fight against a world fiber shortage.

Slow recovery of Philippine abaca (Manila hemp) production, and promise of scant sisal exports from the Netherlands East Indies and Indonesia indicate that no larger quantities of cordage fiber will be available in 1948 than were obtainable in 1947.

"Philippine abaca plantation damage has broved to be more severe than first reported," Colonel Metcalf stated. "Worse ret, looting by armed bands continued after the Japanese were defeated, and the abaca stands were injured to such an extent that increased production may be delayed until 1949 or 1950.

'What is true of abaca is also true of sisal. Labor shortages and a prolonged drought in British East Africa have cut into production. Both abaca and sisal cultivation have dropped in the Netherlands

(Please turn to page 226)





Superior Steel

CARNEGIE, PENNSYLVANIA

Take-off from the performance facts of SuVeneer Clad Metal . . . into a new realm of design opportunities for superior product economy and service! SuVeneer Clad offers the surface advantages of solid copper (or monel or nickel), bonded inseparably to low carbon steel, giving a free hand to fabrication by any usual method. We have a useful bulletin on the physical properties of SuVeneer Clad Metals—write for it. And we'll gladly consult with you on your planning.

POWERING SUGAR-BEET



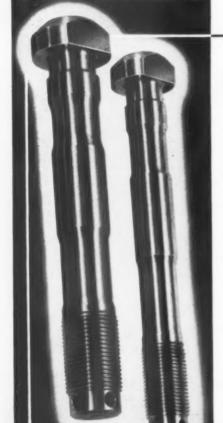
... another example of WISCONSIN Air-Cooled ENGINE UTILITY

Loading sugar beets at speeds of a ton a minute is a far-removed story from the days of hand lobor . . . but during the sugar beet harvest it is a daily occurrence with the King Wyse Sugar Beet Loader, silent roller chain driven, drive gears self-contained, and powered by a four-cylinder Wisconsin Air-Cooled Engine.

Your product power problems can be met most

efficiently with Wisconsin Air-Cooled Engines because of their great adaptability to a wide variety of work and equipment . . . resulting from extreme compactness, light weight, heavy-duty serviceability and a 2 to 30 hp. power range, available in a complete line of single-cylinder, 2-cylinder and V-type 4-cylinder models. For "Most H.P. Hours" specify Wisconsin Air-Cooled Engines.





RITCO

SPECIAL FASTENERS

RITCO Special Fasteners, built for heavy duty service, are uniform in strength, accurate to blueprint and highly finished. Threads are precision cut or rolled, surfaces turned or ground, free of tool marks. RITCO Fasteners contribute to the dependability of many well known products. Available up to 2" diam. in any metal.

Remember RITCO for

Special Bolts, Nuts and Studs • Alloy Steel Studs • Milled Body Bolts • Drop Forging Heat Treating

Let us quote on your specifications

RHODE ISLAND TOOL COMPANY

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Providence 1, R. I.

SERVING AMERICAN INDUSTRY SINCE 1834

(Continued from page 224)

East Indies. Estimates of very limited production are available for 1948 from Indonesia."

Discussing Western Hemisphere hard fiber production Col. Metcalf said that Haiti well illustrates what has been done. In pre-war years sisal production there ran to about 6,000 tons. For 1947, production reached about 22,000 tons. Cuba, for example, was a small producer of henequen in 1920, but by 1940, the island produced 17,000 tons and at least 15,000 tons were turned out in 1947. Mexican henequen production touched the 100,000-ton mark last year but domestic mills consumed about 20% of this volume for local cordage manufacture.

The three hard fibers, abaca, sisal and henequen, are essential for the manufacture of marine cable, drilling cable, and all types of heavy rope, Colonel Metcalf explained.

PHOTO-ELECTRIC COLOR EYE DEVELOPED

A scientific color brain, accurate to within one-half of one per cent, has been developed in the research laboratories of the Pittsburgh Plate Glass Laboratory, it was announced recently by S. Frank Cox, Director of Research for the Glass Division of the Company.

To be known as the PPG-IDL Color Eye, the new instrument photo-electrically records the response, sensitivity, and discrimination characteristics of the human eye. With greater accuracy than the eye it measures color differences and divides by the total reflected light to give comparisons in terms of percentage reflectance difference, regardless of illumination level or color density.

Developed by P. W. French of the Pittsburgh Plate research staff in collaboration with the Instrument Development Laboratories, Inc., the new apparatus fills a long felt need in the textile world, paint manufacturing and numerous industrial applications where accurate color matching has been almost solely dependent on the skillful use of the human eye.

The Color Eye is more accurate than its human counterpart in measuring reflecting samples as well as clear or diffuse transmission samples. In measurements where surface gloss is important a combination of diffuse and direct illumination is available at optimum angle of illumination recommended by color authorities. The instrument's normal sample area view is one-half inch diameter but it can accommodate samples from one inch to several feet in size.

Color differences are read directly on a meter having two ranges. Approximate luminosity is read directly on a logarithmic scale from 0.1% to 100%. Accurate luminosity or tristimulus values may be obtained by a direct reading micrometer-controlled optical slit comparing the sample to a white standard.

The Color Eye is substantially unaffected by illumination level and stray light. Color comparison is made on a

(Please turn to page 228)



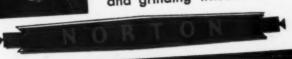


EVEN YOUR GOLF DEPENDS ON ABRASIVES ...

PRECISION in your golf game demands precision in your clubs. And Norton abrasives help make that precision. The forgings for your "irons" are rough ground as illustrated and then the club faces are precision finished on disc grinders. The hosel for the shaft is centerless ground and then the whole club head receives several polishing operations with succeedingly finer sizes of ALUNDUM abrasive. And in the sanding operations on your "woods" the products of the Norton Behr-Manning Division are widely used.



Yes, abrasives are important to you for they had a part in producing about every product you use — from the alarm clock that wakes you in the morning to the refrigerator that furnishes your midnight snack. And wherever abrasives are used you'll find Norton — for Norton is the world's largest producer of abrasives and grinding wheels.



NORTON COMPANY . WORCESTER & MASS.

(Redr.-Monatog, Tray, N. Y. is a Norten Division)



AUTOMATIC TACKERS AND WATCH PROFITS GO UP

Eliminate the hammer and nail brigade and bring your production up-to-date and actually ahead of schedule—increase your profits with Duo-Fast tackers. Fast—accurate, these tackers can do a complete job easily with one hand. They're excellent for tacking in awkward places.

There is an automatic Duo-Fast Tacker for every tacking job. All are fully guaranteed as long as genuine Duo-Fast staples are used.





887 Fletcher Street

Chicago 14, Illinois

(Continued from page 226)

basis of luminosity and direct tristimulus measurements. Colors thus matched are industrially satisfactory regardless of the detailed spectrophotometric color curve of the samples.

The Color Eye, adaptable to innumerable industrial applications, will be marketed by the Instrument Development Laboratories, Inc., Williston Park, Long Island, New York.

LIGHTING CALCULATIONS SLIDE RULE

A pocket-size "Calcu-light-or" approximately 4 inches by 8½ inches for rapid illumination calculations has recently been developed by Westinghouse Electric Corporation. Of slide-rule design, the Calculight-or includes all of the technical information necessary to make illumination



calculations either by the Lumen or Pointby-Point methods. No regular slide rule is required with its use nor are any additional tables or charts needed for Lumenmethod callculations. A distribution curve is required for point-by-point calculations.

The Calcu-light-or is available at the price of one dollar from Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pa., or from Westinghouse distributors.

REUSE OF SINGLE TRIP CONTAINERS

Single trip containers made to I.C.C. 17-E Specifications, from which contents have once been removed following uses for transportation of any article, must not be again used as shipping containers for explosives, inflammable liquids, inflammable solids, oxidizing materials, corrosive liquids, or poisons, Class "B" or "C' as defined in Campbell's Freight Tariff No. 4; Provided, that during the present emergency, and until further order of the (Interstate Commerce) Commission, singletrip containers may be reused, if retested and approved for service by the Bureau of Explosives. Application for permission to reuse should be made to the Bureau of Explosives, 3 Vesey Street, New York 7, N. Y. . . Authority: Campbell's Freight Tariff No. 4, Section 28 (h) as amended in Supplement 6, July 10, 1943. Weekly Letter, N.P.& V.A.



threads on 21/2" to 4" pipe

• The 4P is designed for fast accurate threading with a minimum of muscle fag for you. Loop handles make it easy to pick up, carry, put on pipe, even when you're tired and it's greasy. You quickly set mistake-proof plate type workholder to size before putting it on pipe. Only one screw to tighten—no bushings to fuss with and lose. Gear is enclosed, safe, dirt-proof. Ratchet handle furnished; RIDULL universal drive shaft available for power drive. The RIDULL 4P is a real work-saver; see it at your Supply House...soon.



A POWER DRIVE that's a cinch TO HANDLE

pipe for your hand threaders, cutters, reamers



Universal motor—forward and reverse, light-socket power. No oil to spill, lubrication sealed in. Model "400" comes equipped with handy tool tray, fittings and feet but without legs. A real work-saver. Buy it at your Supply House.

holder in rear turns with pipe.



TOOLCOMPANY

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THE NEW rate chart on the Triner Allmail Scale is easier to read. It tells you the exact postage for your outgoing mail, in every class and zone. Airmail rates are in red. The section of chart shown above is actual size. Chart is easily replaced when rates change (Jan. 1, 1949).

The knife-blade indicator gives you an instant, positive reading. Accurate within a few grains. No more stamps wasted each day in guesswork. No risk of mailing "postage-due" letters.

Shown above is the Triner Allmail Computing Scale No. 120, 20 ounce capacity. Why not look over our folder on this and other Triner models?



You get full facts	oupon today and mail at no obligation. Write Triner , Dept. C-1, 2718 West 21st I.
NAME	
ADDITES	
CITY	STAL
BY	POSITION

EXTERIOR ENAMEL FOR ALUMINUM PRODUCTS

A new synthetic heat-hardening lowgloss enamel, especially suited for factory finishing of aluminum intended for outside exposure, is announced by the Sherwin-Williams' Industrial Division. Tests have shown the finish to be very resistant to 2,000 hour accelerated weatherometer exposure and 1,500 salt spray exposure. It has also withstood 50 cycles of a heat and cold test during which there was noticeable expansion and contraction of the aluminum base.

Sherwin-Williams engineers have perfected a special system for using the new finish. After surface preparation, the aluminum may be roller coated with primer and baked, then fabricated and sprayed with the finish bake coat. Or, both the primer and finish coat may be applied after the metal has been fabricated.

CELLOPHANE ENVELOPES SOLVE SAMPLING PROBLEMS

Sampling of Plastipitch, a roofing material manufactured by Koppers Co., Inc., Pittsburgh, Pa. was a problem. Advertising had produced numerous inquiries, and requests for samples, but labels would not stick, paper wrappers absorbed oils, and frequently the samples were stuck away in a drawer to be brought out only at special requests.

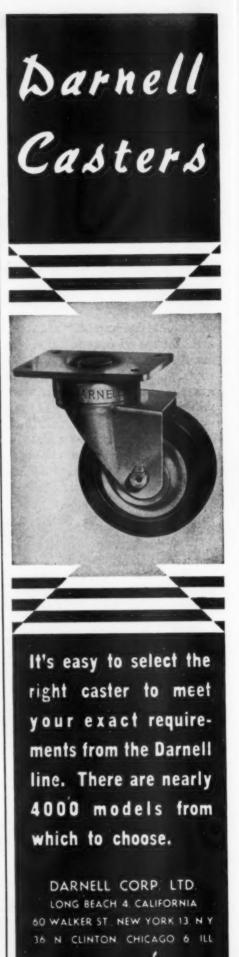


The solution was found in envelopes of printed cellophane, in which (5x8) samples of Plastipitch now go to prospective users. The colorful printed side of the envelope (red, yellow and black) carries complete descriptive matter and selling copy. The transparent reverse side permits examination without removing it from the envelope, which, being greaseproof, automatically solves the problem of oil stains and absorption.

NEW SYNTHETIC RESINS IMPART FINE FINISHES TO TEXTILES

Cotton that looks like linen and rayon that has the feel and appearance of fine silk are now made possible by the use of new synthetic resins developed by the American Polymer Corporation, 101 Foster St., Peabody, Mass. The resins, known as Polysize Emulsions are basic ingredients for fin shes rather than ready-to-use finishes in themselves, and are being offered only to manufacturers of textile finishes.

The resins are said to make nylon hos-(Please turn to page 232)





"Concentrate on the P.A. for more efficient selling."

"The P. A. is definitely the key man in today's buying picture and this is all to the good," says Mr. Arndt, Vice President and Director of Sales of the Gaylord Container Corp.

"Today's well-informed P. A. knows the whole production picture in his plant — has a good appreciation of comparative values and, most important, can say 'yes' and make it stick. Naturally, our salesmen concentrate most of their effort on the P. A. for faster, more efficient selling."

The same holds good in advertising. Concentrate

your advertising effort on the P. A. for faster, more efficient selling. There is one sure way to do this. Put your sales messages in Purchasing — the P. A.'s own trade paper and read by P. A.'s controlling 85% of industry's purchases.

Purchasing is the one magazine the P. A. is sure to get... read... depend on. It is the one place your advertisement is sure to catch his eye. Learn more about this effective way to lower selling costs. For full details write: Purchasing, 205 East 42nd St., New York 17. Offices in Chicago, Cleveland, Los Angeles.



ING



"Come, now, Ferdinand! I know that Armourclad Disc makes your work easy, but that doesn't mean you should take off on a mental cruise."



ARMOURCLAD RESIN FIBRE DISCS

For Faster, More Productive Metalworking

Actual production tests have proved that this new disc cuts faster. This greater initial rate of cut lowers production costs, reduces labor costs.

The new Armourclad Resin Fibre Disc cuts faster longer because its special resin bond gives better grain adhesion—greater resistance to heat and humidity.

Better for all disc operations, the new Armourclad Resin Fibre Disc gives faster, more productive metal working — is especially good for severe grinding jobs.

We recommend buying through your Industrial Distributor

ARMOUR and Company

Coated Abrasives Division

1355 WEST 31ST STREET . CHICAGO 9, ILLINOIS

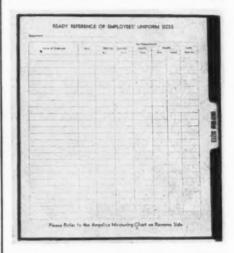
(Continued from page 230)

iery snag proof, increase the wearability and rub resistance of fabrics, make possible permanent starching of clothes, curtains and other textile products. They are also claimed to provide tough, flexible, washable coatings for artificial leather, crib sheeting and baby pants.

A new data sheet, P-5, describing the qualities the new emulsions impart to textile finishes is available from the company.

CHART FOR KEEPING RECORD OF EMPLOYEE UNIFORMS

A chart for keeping permanent record of employees' uniform sizes is offered as a free service by the Angelica Jacket Company, 1419 Olive St., St. Louis, Mo. The chart is called the "Ready reference



of Employees' Uniform Sizes" and is ruled for showing records of 25 employees. The front side of the card is as illustrated. Printed on the reverse side is a uniform measuring chart and instructions for ordering coats, dresses, pants and caps. The chart is printed on heavy file card stock and will fit into any normal file drawer.

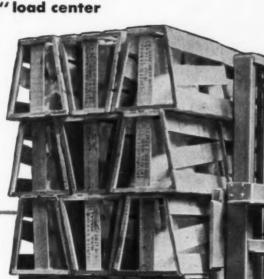
FOAMGLAS PIPE-FITTING COVERS

The manufacture of pre-formed pipefitting covers of Foamglas for both hot and cold fittings, is announced by the Pittsburgh Corning Corp., 632 Duquesne Way, Pittsburgh, Pa. The covers are designed for use with Foamglas pipe insulation and are said to be particularly suitable for various fields where exact temperature control is required, whether heat is to be retained or excluded. The covers are being made in all sizes for Ls, Ts, unions, valves, elbows and flange covers. When installed according to the manufacturer's specifications, the new covers may be used through temperature ranges from minus 200 deg. F. to plus 800 deg. F. Foamglas is impervious to water and water vapor, fire retardant, highly resistant to fumes, acids and other elements. It is said to have the same thermal conductivity wet or dry, and that it will maintain its original low rate of heat transfer permanently.

(Please turn to page 234)

ARMOURCLAD

Type F-26T 2000 lbs. capacity 24" load center



ELWELL-PARKER
Fork Truck
Offers You!

LIGHT WEIGHT only 4550 lbs. with battery; ideal for low capacity floors and elevators

IMPROVED VISION due to dual, side-placed hydraulic cylinders

TOP MANEUVERABILITY straight linkage steering; short turning radius

LOW PRESSURE HYDRAULIC SYSTEM less chance of leakage

LOW CENTER OF GRAVITY permits higher speeds on turns

QUICK ACCESS OR EXIT FROM EITHER SIDE

ADAPTABLE FOR SPECIAL LOAD HANDLING DEVICES

AIR FOAM, FORM FITTING SEAT

LESS COUNTERWEIGHTING

HYDRAULIC SAFETY VALVES CONTROL LIFT & LOWERING

SEND FOR ILLUSTRATED BULLETIN



PROMPT DELIVERY

WHY? Elwell-Parker has produced this new low-capacity fork truck in view of ever increasing costs of common labor. Model F-26T is the latest member of the EPE "AIR RIGHTS" Series. The Elwell-Parker Electric Company, 4519 St. Clair Avenue, Cleveland 14, Ohio.

ELWELL-PARKER

POWER INDUSTRIAL TRUCKS

Established 1893

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Only AIR EXPRESS gives you all these advantages

A combination you don't get with other air-shipping methods

- Special pick-up and delivery at no extra cost. Your shipments are picked up promptly when you call; fast delivery to consignee's door.
- You get a receipt for every shipment, and delivery is proved by signature of consignee. One-carrier responsibility. Complete security.
- Assured protection, too—valuation coverage up to \$50 without extra charge; 10 cents for each additional \$100 or fraction thereof.

These advantages, plus 21 others, make Air Express the best and fastest way to ship. Your shipments go on every flight of the Scheduled Airlines—repair parts, equipment, finished items keep moving to where they're needed. Reach any U.S. point in hours. Phone local Air Express Division, Railway Express Agency, for fast shipping action. Specify "Air Express" on orders for quickest delivery.

FACTS on low Air Express rates

22 lbs. machine parts goes 700 miles for \$4.73.
10 lbs. printed matter goes 1000 miles for \$3.31.
30-lb. carton of new fashions goes 500 miles for \$4.61.
Same day delivery in all these cases if you ship early.



AIR EXPRESS, A SERVICE OF RAILWAY EXPRESS AGENCY AND THE SCHEDULED AIRLINES OF THE U.S.

DRIVE GEAR PRODUCTION SPEEDED WITH UNDER-PASS MACHINE

Finishing time for helical "shoulder" gears for a popular half-ton truck has been cut more than in half—to 32 seconds (floor-to-floor time)—and overall tool cost per gear has been reduced through the use of "underpass" shaving at New Process Gear Corporation, Syracuse, New York.

The machine used is a standard Michigan Tool Company Underpass Rotary Shaving Machine, Model 860-A, one of several now being used at New Process. One of the gears for the ½-ton truck transmission is shown between the machine



Floor-to-floor time for finishing this shoulder gear for a popular ½ ton truck, has been cut to anly 32 seconds.

centers in the accompanying photo. It has 17 teeth with a 34° left hand helix angle. Diametral pitch is 7.954; pressure angle is 20°; and pitch diameter is 2.137 inches. The gears—of S.A.E. 4027 steel—come to the shavers with between .006 and .008 inch measured over pins stock left for shaving the teeth. Machine operation is automatic except for loading.

With the former shaving method, some cutter breakage was experienced due to interference with shoulders. This interference has been eliminated in the new setup.

LIGHTWEIGHT FOLDING MAGNESIUM CHAIRS

1 1 1

Two models of magnesium folding chairs, which are said to weigh nearly two pounds less than a comparable wooden frame and nearly three pounds less than a similar aluminum design would weigh, have been announced by Louis Rastetter and Sons Company, 1306 Wall St., Ft. Wayne, Ind. The frames weigh slightly over five pounds each.

The chairs, developed with the cooperation of The Dow Chemical Company, have frames which are die cast as units with no welded joints or seams. This adds strength and durability to the light weight feature. The chairs are opened by pressing the seat down. To fold, the front rung is depressed, raising the seat and causing the seat cushion to close against the back cushion. The chairs are large and cushioned with sponge rubber. Upholstery is of a durable plastic in a variety of colors, with frames finished in complementary colors.

Versatility ...



PRESTEEL has successfully engineered and produced thousands of stampings from many different metals for American industry.

That's why you'll find alert and intimate knowledge at Presteel of constant changes and improvements in metal structure and working processes. Each metal has its own characteristics . . . presents a different problem . . . requires study and application of the proper tool design, fabrication methods and the use of the most modern equipment to assure the economical production of your parts.

This technical ability, when coordinated with the skill and long experience of its craftsmen, makes Presteel the outstanding source of supply today for stampings from any type of workable metal. Tell us about your problems or consult your nearest Presteel representative.

Representatives in ALEXANDRIA, VA. BUFFALO CANTON, OHIO CHICAGO DENVER DETROIT



TORONTO, CANADA FORT WORTH INDIANAPOLIS LOS ANGELES NEW YORK PHILADELPHIA SYRACUSE

ALLOY STEELS AND OTHER METALS COLD FASHIONED SINCE 1883

* * WORCESTER PRESSED STEEL CO.

* * *

210 BARBER AVENUE WORCESTER 6, MASS.

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Thousands of sips by expert tasters keep blends of coffee uniform. Photographed at Hills Bros. Coffee, Inc., San Francisco plant,

Food processing? Here, too, Moore cuts costs

The great corporation and the corner grocer have this in common — Moore helps both pull down costly overhead.

Hills Bros. Coffee, Inc., uses Moore multi-copy forms and sharply cuts billing, invoicing, bookkeeping costs. The smaller business saves, too, because Moore offers the right business form for every form of business. A small Memphis specialty foods distributor, for example, had been burdening its salesmen with 2 separate cash and

charge salesbook systems. Moore designed a 3-part continuous register form combining all sales in one form, completed in one writing.

Your business, too, can cut costs. Call your local Moore office (in over 200 cities from coast to coast) for moneysaving details. Factories in Niagara Falls and Elmira, N. Y.; Minneapolis, Minn.; Denton, Tex.; Los Angeles and Emeryville, Calif. Also sales offices and factories across Canada.



BUSINESS FORMS, INC.

THE ONLY NATIONAL COMPANY THAT OFFERS A COMPLETE RANGE OF MODERN BUSINESS FORMS—

THE RIGHT BUSINESS FORM FOR EYERY FORM OF BUSINESSI



Marginal Punched



Sales Books for



nstantaneous Carbon-



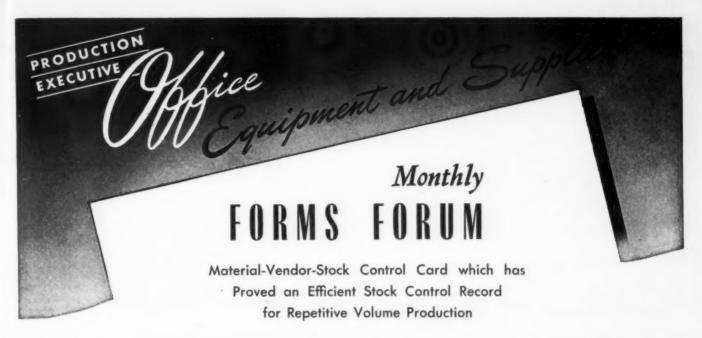
Continuous Interleaved



Fanfold Billing



Registers and Continuous Register Forms



An inventory turnover each 60 days is one of the accomplishments born of procurement system used by the purchasing department of the Gravely Motor Plow & Cultivator Company, Dunbar, W. Va. Furthermore, according to Purchasing Agent Fred Roush, assembly department delays that might be attributed to shortages of material are nil.

Also attesting the efficiency and flexibility of the system is the fact that there has been a 500% increase in production since 1946, procurement for which has been ably handled by a minimum personnel in the purchasing department, namely, the purchasing agent, assistant purchasing agent, and job cost clerk. In connection with the latter, Mr. Roush states that although summarizing labor job costs is not an integral part of purchasing, it fits in a practical way into the activities of the department, and the information has proved invaluable for the purchasing of machine labor from outside sources and for inventory valuations.

In submitting the accompanying forms used by his department—which include material requisition, steel requisition, receiving report, purchase inquiry, purchase order, purchase order change, and Combination Material-Vendor-Stock Control Record, Mr. Roush advises that the Control Record form, designed and used by his department the past four years, has proved an excellent stock control method for repetitive volume production.

Currently the purchasing department is procuring materials for an annual sales volume of more than four million dollars, production of which is on an assembly line technique, according to Mr. Roush.

The purchasing function for 1200 miscellaneous production parts, 1650 repair parts stock, and all accessory or operation materials, he states, centers about the special Material-Vendor-Stock Control card

trays. Further explaining the system, Mr. Roush writes as follows:

"This $8\frac{1}{2}$ " x 11" record card serves a multiple purpose: The part number, weight, and ordering specifications head the card. The larger space on the front and back

provides a permanent record and reference to purchase orders.

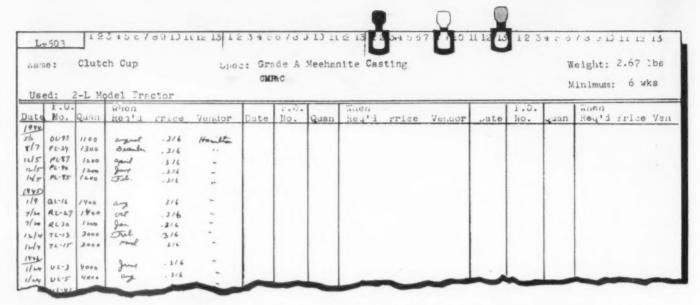
"Purchase orders are filed alphabetically while the order is unfilled, and by order number when the order is completed.

(Please turn to page 238)





Format of the Change Order form is similar to that of the Purchase Order except that the central part, as shown at left, carries the words "Change Order" in large type, and description of original order and the "Change to":



The purchasing function for production and repair parts and all accessory and operating materials centers around the Material-Vendor-Stock Control cards. This form, according to Purchasing Agent Roush, has proved an excellent stock control method. The back of the card (below) records Repair, machining cost, and varied Vendor data. The system used by the Purchasing Department makes possible a 60-day inventory turnover.

Date	P.O. No.	uan	When Rey'd	Price	Vendor	Year	E P /			(4)	Machining Cost Gravel	
			GM/Pe.C			1944 1945 1946 1947 1948	167	151 245 193 436 448	147 250 268 441	59 232 239 149	440-up .316 ea 1940-45 .404 ea 11/17/45 .454 ea 8/21/47 .544 ea 3/1/48	
					٠						4,001-up \$15.64 cwt 3/1/46 \$17.20 cwt 4/1/48	

(Continued from page 237)

Invoices are filed by vendor names alphabetically; hence a cross reference between Material Record, Purchase Order and Invoice. The back of the card is also utilized for Vendor Information and for Repairs. The repair record is very essential to stock control, and consists of total quantity shipped each quarter each year.

"Stock control is accomplished by file signals across the broad side of this special Material-Vendor-Stock Control card. The cards are stored on edge in trays. The edge is divided into four spaces with each space numbered one through 13. The space across the entire card represents one year, divided into four quarters and the numbers one through 13 represent each week of the quarter. A different color file signal is used for five stock control phases:

Dark Red—Below Minimum
Light Red—Stock on hand
White—Stock on Order
Blue—Stock on hand in storage at
other points
Green—Date to Order

"The unit of goods is termed in "weeks".

(Please turn to page 246)

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						this form	ting, use origin provided. Fi rmation before	ill in com-
THIS IS	AN INQUIR	Y - NOT	AN	ORI	DER	not suppl	quote on articl ly. If substitu ike full explan	tex are of-
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THIS IS	Delivery Point	By D Pa	arcel Post	D.F	reight—New ruck	fered, ma	ly. If substitu ike full explan	tes are of- ation, indicated,
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The Key to Quality Reproduction...



INKED RIBBONS



CARBON RIBBONS



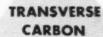


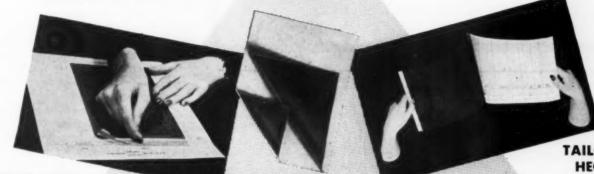
UNDERWOOD
CORPORATION
SUPPLIES
for Every Duplicating,
Carbon & Ribbon Need

CARBON PAPER



CARBON ROLLS





PRESS EDGE

TAILORED

TRY THEM! COMPARE THEM! SEE THE DIFFERENCE!
Samples and prices available at all branch
offices or write direct to us.

UNDERWOOD CORPORATION

BURLINGTON

Supply Division

NEW JERSEY

GM	IP&C			DATE	
SIZE	ANALYSIS	NO. PCS.	LENGTH	MAKES PART NO.	REC. BY.
	8½" x 5½"				
					-

PART NO GMPC PART NAME ACTUAL SI ZE 51" X 83" DATE: GRAVELY MOTOR PLOW & CULTIVATOR CO. DUNBAR: WEST VIRGINIA

Received From GM	P&C	Order	No.
	8" x 6"	Box N	0,
Freight Charges			ect Pro. No.
QUANTITY	********		
doug 18 1 7	MATERIAL		WEIGHT

(Continued from page 238)

Instead of 3500 pieces, for example, we speak of nine weeks (to the nearest week.) The definition of a "week" is the amount of one item expected to be consumed within the seven day period. To determine the quantity represented by a "week", we total the number of tractors to be built times the number required per tractor unit, plus the average number needed for repair orders. This is why the handy repair record on the back of the Material-Vender-Stock Control card is so important. At a glance the record is available for past years and the future years can be forecast.

"To explain the accompanying sample stock control for Part L-503: The time is the second week of the third quarter. Beginning at the second digit in third quarter and counting back two digits to the dark red (solid black) signal indicates supply is two weeks below minimum.

"The blue signal (shaded) set at the 13th week shows a stock of castings exists at another location. (This particular part is located at another machine shop. Machine time is purchased in addition to

Reproductions of two types of Requisition and Receiving Report in current use by the Gravely Company are shown in the opposite column.

materials through this office.)

"The green signal (outline) shows that on the 9th week of the third quarter an order should be entered with the foundry for additional supply of castings. When this order is placed, the green signal will be removed. When a shipment is received at this plant from the stock located at machining source, for example a five-weeks' supply, the dark red will be advanced five digits or from the first to the sixth week. The light red signal instead of the dark red will be inserted at the sixth week because this supply is above minimum, or to the right of the present time of second week.

"The below minimum and stock on hand signals are posted from daily receiving reports. The stock on order signal is set when the purchase order is posted. The date to order signal is set every 60 to 90 days by a review of ordering lead time required. Each week the file is run to change signal to below-minimum when the stock-on-hand signal has not kept ahead of the current week. Expediting action is taken at the same time for parts below minimum.

"An inventory turnover each 60 days is accomplished by this effective system. The assembly department delays that might be attributed to shortages of material are nil."

In explanation of the duties of the per-

(Please turn to page 242)

No matter what kind of records you keep or how many... They'll cost you less on UARCO business forms



For instance... this E-Z-Out Form is one of the many types with which Uarco serves every kind, every size of business.

With E-Z-Outs, one writing produces every copy the job requires. No carbon mess... carbons come already interleaved. Copies are held together neatly for additions or corrections—then detached with one simple operation.

Perhaps it's an invoice, a cash sale form, a work order, a receiving ticket. Maybe you write a thousand forms a day—a week—or a month.

No matter what kind or how many, they still must be produced...copied...distributed...filed. And there's where Uarco business forms save you money! They cut the time for each operation to an absolute minimum. And at today's wages, time is certainly money!

Give your people a chance to serve you more effectively. Call in a Uarco Representative for a complete survey of your business form requirements. There is no charge for this service—no obligation whatever.

UARCO INCORPORATED .

Chicago, Ill.; Cleveland, O.; Oakland, Cal.; Deep River, Conn. Offices in All Principal Cities



Business Forms



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CONTINUOUS-STRIP FORMS FOR TYPEWRITTEN AND DUSINESS MACRINE RECORDS



SINGLE SET FORMS



ABTOGRAPHIC REGISTERS AND REGISTER FORMS

NEW SPEED

UP TO 180 COPIES A MINUTE

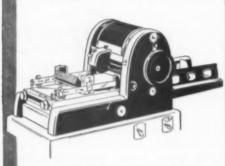
NEW

A. B. DICK "400" SERIES

MIMEOGRAPHS

with

Flexamatic Control



Flexamatic Control—exclusive feature of the new A. B. Dick "400" mimeographs—makes "get-ready" time a matter of seconds. Then comes the fast production of clear, permanent copies.

And it is so easy.

Your nearby A. B. Dick branch or distributor is listed in the phone book. Ask for a demonstration. Or write for more information about the new A. B. Dick "400" mimeographs. For use with all makes of suitable stencil duplicating products.

A. B. Dick Company, 720 West Jackson Boulevard, Chicago 6, Illinois. The Mimeograph Company, Ltd., Toronto, Canada.

A. B. DICK



"the oldest name in mimeographing"

(Forms Forum continued from page 240) sonnel of the purchasing department, Mr. Roush states that the purchasing agent is responsible for policies, planning and programming; inventory control and for capital expenditures, and selection of all production materials incorporated into the product. The assistant purchasing agent's responsibility is buying all miscellaneous expense materials, posting the stock control record and the purchase order file, approving invoices, and preparation of the monthly inventory report. The department's letter work is transcribed by transcription department in the general office.

SMALL CAPACITY BINDER

A small capacity catalog binder that offers the convenience of flat reference and easy sheet changes, is announced by Systems Division, Remington Rand Inc., 315 Fourth Avenue, New York, N. Y. The new binder is available in a full range of sizes and durable materials, and the line is known as the "Ring-Slide." The design embodies a simple slide mechanism with smooth-rounded one-piece rings, one-inch spaced, that take regular loose leaf sheets punched with standard "closed" holes.

The sizes range from 3%" to 78" capacity, in binding lengths from 3" to 14", answering both standard and non-standard page size requirements including pocket-

size memo books and over-size binders. There is a wide choice of cover materials from paper to genuine leather. The line is described in folder LL-149A.

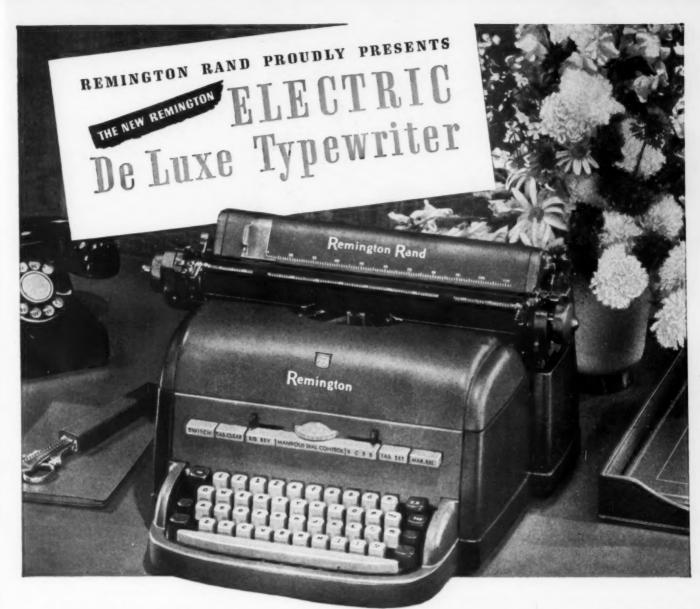
FOUR-IN-ONE DRAWING

Illustration shows drawing instrument made of vinylite rigid plastic by the Danat Company, 315 W. Van Buren St., Chicago 7, Ill., which combines the compass, pro-



tractor, ruler and T-square in the same unit. Operation is said to be simple and accurate. One end is equipped with a free-action, clear plastic pivot button which magnifies, permitting absolute correctness when placing over the point to serve as the circle center. One edge of the instrument is equipped with pencil-point holes for making circles of 5%" to six inches in diameter. As a ruler the device is graduated into 1/16 inch calibrations.





Climaxing 75 years of service to the Business World

This newest product of Remington Rand—the crowning achievement of 75 years of typewriter research and development—continues the leadership begun in 1873 with the first typewriter. The new Remington Electric DeLuxe, the handsomest typewriter ever designed—and the best-engineered—provides increased typing production with decreased typing

ABCDEFG ABCDEF

New Remington Rand type! Designed for greater readability . . . perfect stencils. effort. It brings you a new high in typing perfection — every character perfectly formed, perfectly printed, absolutely uniform in appearance. The scientifically developed Finger-Fit Keys invite flying fingers to flow smoothly, swiftly over the easy-to-stroke surface of its keyboard; the quiet, sturdy motor has an unfailing reserve of power ample to meet every typing need. Here is performance which combines an ease of operation with a split-second response



Finger-Fit Keys adjust fingertips automatically

and an increase in output that delights the secretary... is a revelation to the executive. The typist need no longer worry about individual touch for beautifully typed letters and reports—with the new Remington Electric DeLuxe she merely touches the keys, and the quiet, smoothly functioning electric mechanism picks up the action and uniform typing appears on paper!

Today, see this handsome new Remington Electric DeLuxe Typewriter . . . call your nearby Remington Rand office; let a trained representative show you its many features that will give you better typing, faster, at a lower net cost!

The new REMINGTON ELECTRIC DELUXE TYPEWRITER is unusually compact...fits all standard fixed-bed, center-drop and pedestal-style typewriter desks.

Remington Rand THE FIRST NAME IN TYPEWRITERS





... and both ends of the conversation will be recorded . . . by SoundScriber!

Whether Moscow, U.S.S.R., or Moscow, Idaho . . . important telephone calls to or from anywhere may now be recorded on your SoundScriber . . . the electronic disc dictation equipment that leads the way in business communications; that records your letters, reports, instructions, telegrams and memos on unbreakable, lightweight discs that are permanent records. They're mailable, fileable and routable, too.

Now...no more scribbled notes or fleeting recollection of what has been said . . . of delivery promises, price commitments, shipping instructions, specifications or other obligations. No calling your secretary to listen in or take notes . . . no disturbing ber busy program. For SoundScriber captures every detail . . . clearly and so distinctly that both voices are instantly recognizable. And SoundScriber automatic DISCopying makes duplicate "livevoice" copies as confirmation, right at your desk . . . only SoundScriber can accomplish this.

Mail the coupon, today, for the informative booklet "Let SoundScriber Remember" . . . all about the service of SoundScriber Telephone Recording in your business. Your local telephone company will be glad to furnish full details about connecting SoundScriber to your telephone.



SoundScriber discs hold up to 30 minutes of dictation—are easily indexed, routed, are easily indexed, routed, filed or mailed. Radio-clear quality insures accurate transcription. Low first cost, lower operating cost.

ELECTRONIC DICTATING AND RECORDING EQUIPMENT

To find out how SoundScriber applies to your business, phone the nearest distributor, listed under "SoundScriber" in your classified telephone directory. Or mail the coupon.

BROWN PAPER CO. NAMES KANSAS CITY DISTRIBUTOR

L. L. Brown Paper Company, Adams, Mass., has announced the appointment of the Butler Paper Company as distributor of their lines in Kansas City, Mo.

MARKS 25TH YEAR WITH EBERHARD FABER

Louis M. Brown, vice president and general sales manager of the Eberhard Faber Pencil Company, a position to which he was appointed in December 1946, recently celebrated his 25th anniversary with the company, with which he first became associated in August 1923 as Canadian representative at Toronto. In 1925 he was



Louis M. Brown

transferred to the main offices at Brooklyn, N. Y., as advertising manager, became assistant sales manager in newly established New York office in 1928, became sales manager at the Brooklyn office in 1938, and in 1945 was made general sales manager. Mr. Brown is also vice president of the manufacturers division of the Wholesale Stationers' Association, vice president of the Fountain Pen and Me-chanical Pencil Manufacturers Association. Inc., and is a member of the National Stationers Association in which he has held office and served on various committees.

1 1 1 MACO MANILA FOLDER ROLL LABELS AVAILABLE

The J. L. May Co., New York, N. Y., has announced the availability of Maco manila folder roll labels. Due to the shortage of manila gummed paper the item had been discontinued for several years. They are also stocked in white, buff, cherry, blue, orange, canary, green and salmor

McBEE COMPANY ACQUIRES NEW PLANT IN ATHENS, O.

The McBee Company has acquired a new plant in its home city of Athens, O. It will be known as Athens Plant No. 2. with Harry Begg as plant manager. Mr. Begg was for many years Purchasing Agent for McBee, occupying that position until he was named assistant plant manager of the main factory in 1947.

(Please turn to page 248)



Distributors of Howard Bond

Azzmanna D.	Kemmerer Paper Co.
ALLENTOWN, PA	Southern Paper Products Co.
	Knight Bros. Paper Co.
	The Barton, Duer & Koch Paper Co.
	Garrett-Buchanan Co.
	Garrett-Buchanan Co. Stephens & Co.
BINGHAMTON, N. I	Blake, Moffitt & Towne
	Andrews Paper Co.
	Henry Lindenmeyr & Sons
BUFFALO, N. Y	Paper Service, Inc.
	Union Paper & Twine Co.
CHARLOTTE, N. C	Henley Paper Co.
	Marquette Paper Corp.
CHICAGO, ILL.	Moser Paper Company
	Parker, Schmidt & Tucker Paper Co.
	The Chatfield Paper Corp.
CLEVELAND, OHIO	The Cleveland Paper Co.
	The Union Paper & Twine Co.
	The Diem & Wing Paper Co.
DAVENPORT, IOWA	Peterson Paper Co.
	The Central Ohio Paper Co.
	Newhouse Paper Co.
	The Union Paper & Twine Co.
	Duluth Paper & Specialties Co.
	Blake, Moffitt & Towne
	Grand Rapids Paper Co.
	Carpenter Paper Co. of Mont.
	F. L. Van Derlip Co.
	Henley Paper Co.
HOLYOKE, MASS	Judd Paper Co.
	C, P, Lesh Paper Co.
	Knight Bros, Paper Co.
KNOXVILLE, TENN	Louisville Paper Co.
LANCASTER, PA	Garrett-Buchanan Co.
Lansing, Mich.	The Weissinger Paper Co.
Los Angeles, Calif	Blake, Moffitt & Towne
Louisville, Ky	Louisville Paper Co.
MEMPHIS, TENN	Louisville Paper Co.
	Knight Bros, Paper Co.
	Dwight Bros. Paper Co.
MILWAUKEE, WIS	Moser Paper Company
	Wilcox-Mosher-Leffholm Co.
	J. B. Card & Paper Co.

NEW YORK CITY	F. W. Anderson & Co.
	H. P. Andrews Paper Co.
	Baldwin Paper Company, Inc.
	M. M. Elish & Co.
NEW YORK CITY	
	J. E. Linde Paper Co.
	Royal Paper Corporation
	John F. Sarle Co., Inc.
	Blake, Moffitt & Towne
	Knight Bros. Paper Co.
	Paterson Card & Paper Co.
	John C. Streibich Co.
	Garrett-Buchanan Co.
	Blake, Moffitt & Towne
	The Chatfield & Woods Co. of Pa.
	Blake, Moffitt & Towne
	Paper Service, Inc.
	Blake, Moffitt & Towne
ST. PAUL, MINN	
	Blake, Moffitt & Towne
SAN DIEGO, CALIF.	Blake, Moffitt & Towne
SAN JOSE, CALIF.	Blake, Moffitt & Towne
SANTA ROSA, CALIF	Blake, Moffitt & Towne
SCHENECTADY, N. Y.	Beck Paper, Inc.
SEATTLE, WASH	Blake, Moffitt & Towne
SIOUX FALLS, S. D	Sioux Falls Paper Co.
	Blake, Moffitt & Towne
SPRINGFIELD, MASS	Mill Brand Papers, Inc.
	Blake, Moffitt & Towne
SYRACUSE, N. Y	J. & F. B. Garrett Co.
	Blake, Moffitt & Towne
TALLAHASSEE, FLA	Knight Bros. Paper Co.
TAMPA, FLA.	Knight Bros. Paper Co.
	The Ohio & Michigan Paper Co.
	Blake Paper Co. Ltd.
	Blake, Moffitt & Towne
Washington, D. C.	Stanford Paper Co.

EXPORT DISTRIBUTORS

AMSTERDAM,	HOLLAND		
G.	H. Buhrmann's	Papiergroothandel, N	I. V.
New York	CITY	National Paper & Typ	e Co.
NEW YORK	Сіту	Parsons & Whittemore	, Inc.

Howard Bond Envelopes in all colors, finishes, and styles are manufactured by our envelope plant, Dayton Envelope Company Division, Dayton, Ohio

HOWARD PAPER MILLS, INC. . HOWARD PAPER COMPANY DIVISION . URBANA, OHIO



BERGER GRADE "A" STEEL FILING CASE

in any quantity

Today, improved Berger production facilities make this full line of steel filing cabinets available in any quantity. Now you can obtain the finest-Berger Grade "A"... built to serve throughout a lifetime of hard use.

Berger "A" Label Cabinets are constructed of fine quality furniture steel, electrically welded to form rigid, one-piece case and drawer units. Drawers glide easily . . . quietly . . . on hardened ball bearing rollers. Color choices are attractive platinum gray, olive green, rich mahogany and walnut grains.

The complete Berger Grade"A" line includes accommodations for letters, papers and records in common use. Order now for prompt delivery.

BERGER MANUFACTURING DIVISION REPUBLIC STEEL CORPORATION CANTON 5, OHIO



Have you a lady wrestler in your office?



She is your file clerk, and struggles all day with slumping, sagging folders.

That's no job for a lady. Install Pendaflex hanging folders. They will give her half the work, instead of a half-nelson.

Yes, cut your filing time and filing costs with

Oxford PENDAFLEX*

Hanging Folders
*Reg. U.S. Pat. Off.

OXFORD FILING SUPPLY CO.

MAIL COUPON TODAY

Dept. P. Clinton Road, Garden	City,	N.	Y.
Please send me			
catalog and name of nearby			
dealer who will install trial	draw	er	on
guaranteed-to-save-or-money-b	ack	ba	sis.

Name....

City...

Zone State

INTERNATIONAL PAPER COMPANY MARKS 50TH ANNIVERSARY

The International Paper Company, New York, N. Y., is celebrating its fiftieth anniversary. International was born in 1898 when 20 paper mills in Maine, Massachusetts, New Hampsh re, Vermont and Northern New York were brought together. The bulk of their production was newsprint. Today, The International Paper Company is one of the most diversified paper producing groups in the world, and its production includes newsprint, kraft paper and board, other papers, and pulp. End products include grocery bags, multiwall sacks, shipping containers, envelopes, milk containers and a variety of packing and packag ng materials. Today International is operating mills, plants and woodlands in Maine, New Hampshire, Vermont, Massachusetts, New York, Pennsylvania, New Jersey, North Carolina, South Carolina, Georgia, Florida, Alabama, Mississippi, Louisiana, Arkan-sas, Texas, Missouri, Illino's, Michigan, Kansas, Californa, Indiana and Ohio, and in New Brunswick, Ontario and Ouebec.

WEST COAST CHANGES ANNOUNCED BY OLD TOWN

1 1 1

Carl W. Draper has been appointed Western Sales Manager of the Old Town Ribbon & Carbon Company of Brooklyn, N. Y., with headquarters at 843 South Los Angeles Street, Los Angeles, Calif., where a warehouse has been established with a complete stock of Old Town products. Robert J. Martell will be the special representative for the Southern California area.

In San Francisco and the central and Northern California area, Cameron F., Ashby, with headquarters at 420 Market Street, San Francisco, will be the local representative.

And, Richard P. Vaughan, 516 North 60th St., Seattle, Wash., will serve the Northern Pacific coast area.

In Los Angeles, Southern California Stationers, has been named exclusive distributor for Old Town products; and in San Francisco, Morgan & Barclay Co., 531 Mission Street, has been named exclusive distributor for the city and county of San Francisco.

OFFICE DUPLICATOR PRINTS UP TO FOUR COLORS

1 1 1

A direct-process office duplicator that prints as many as four colors at once by simply changing carbons in making the master, is announced by the American Photocopy Equipment Co., 2849 No. Clark St., Chicago. It is known as the Apeco Speedliner Duplicator. It operates without ink, stencil, gelatin, type, or electric power—reproduces multiple copies of any masteroriginal written, typed or drawn on glossy paper using Speedliner carbon. Operator can turn out 300 legible copies from one master at the rate of 60 a minute.

(Please turn to page 250)

IF your office runs like clockwork... DON'T BOTHER READING THIS!

It happens in the best of offices—routine paperwork piles up . . . and

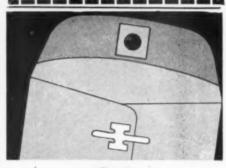
up...and up!
But you may be able to prevent this in your office. Recent research has uncovered many new ways to simplify everyday office jobs—save hours of clerical paperwork—through the planned use of colored pencils.

Over 200 of these practical ideas are assembled for easy reference in a new, handy guide, COLOR SYSTEMS IN BUSINESS. For your FREE copy, attach this ad to your business letterhead, and mail today to:

EBERHARD FABER

Pencil Co., 37 Greenpoint Ave., Dept. P-10, Brooklyn 22, N. Y.

TRADE MARKS REG. U.S. PAT. OF



24
different sizes of
Columbian Clasp
Envelopes
serve every
business need



This NEW Book Tells...



- . How to keep inventories in balance with demand.
- How can we achieve the Ideal Turnover Rate for our business?
- What records will enable us to analyze trends in demand?
- What are the costly limitations of a single-card inventory record?
- What forms and procedures will save us up to 50% in operating time?
- How can we effectively eliminate writing of purchase requisitions?
- How can we save money with THE CHART THAT THINKS?

Answers to these — and many other vital questions on inventory control — are covered in this valuable free book. Every businessman can profit from reading "How. To Get Profits From Inventories". Write for your copy today. Use the coupon.

HOW TO GET
PROFITS FROM
INVENTORIES

COPY FREE ON REQUEST

Here's a timely Remington Rand publication that goes right to the heart of this urgent question of profitable inventory control. In a clearly written, profusely illustrated 24-page book, just off the press, we have compiled facts on the most advanced methods of simplifying this important management problem — positive, profitable inventory control at lowest cost for clerical upkeep and executive use.

Today, more than ever before, it is imperative to anticipate trends in demand — to order more of those items on which volume is increasing — to reduce buying where demand is slackening. Today, you need much more than a record of stock-on-hand and on order. You need a real control over inventory — a control sensitive to the fluctuating requirements of every item — a control that will force attention and action to cut down loss-producing overstocks and prevent profit-killing understocks.



Reminaton Rand
THE FIRST NAME IN BUSINESS SYSTEMS

MAIL COUPON TODAY

REMINGTON RAND .

315 FOURTH AVENUE NEW YORK 10, N. Y.

Yes—send FREE copy of your new 24-page book, "How To Get Profits From Inventories."

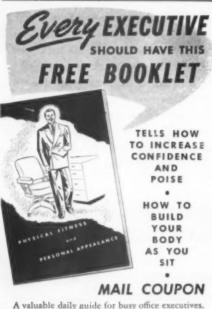
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COMPANY.....

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STATE.....





A valuable daily guide for busy office executives. Important, helpful suggestions and information for daily use and reference by men who are interested in their "Physical Fitness and Personal Appearance." Write for this free book. No obligation

DOMORE CHAIR COMPANY, INC. Dept. 1012 Elkhert, Indiana

Send the new, and Personal	FREE bookle Appearance".	et, "Physical Fitness at no obligation.
Name		
Address		
City	Zone	State
Company		Title

What's New?

HERE'S an easy way for you to keep abreast of NEW developments in materials, equipment, finishes and processes:

Every month you will find listed in the "Ask Purch" Section — Pages 14 to 20, incl., from 75 to 100 new pieces of manufacturers' literature.

TAKE your selection of the literature of interest to you, and which you may need to bring your catalog files up to date.

And, check the numbers on the post-paid postcards on Pages 19 and 20. "Purch" will see that the material is sent to you without cost.

ask Purch-

IBM ANNOUNCES NEW ELECTRONIC BUSINESS MACHINES

The introduction of several new electronic business machine units was announced recently by International Business Machines, New York. The new units include electronic calculating punch, high speed sorter, electric time system with electronic self regulation, electric punched card accounting machine with three-line listing, a new attendance time recorder, and an automatic line selector for the IBM electric typewriter. Previously announced commercial machines employing electronics are the electronic collator, the reproducing punch with mark sensing and the electronic multiplier.

The calculating punch is a high speed unit engineered to perform problems of multiplication, division, cross-addition and cross subtraction, and to punch the results in cards at greater speed than here-tofore possible in business. The outstanding feature of the high speed sorter, used for arranging and selecting IBM punched cards, is a substantial increase in its speed of operation. The card supply may be replenished without stopping the machine.



The new electronic calculating punch multiplies, divides, cross adds and cross-subtracts, performing all calculations electronically.

The electric time system with electronic self-regulation operates from the regular supervised 60-cycle commercial alternating current. Synchronous motor clocks are self regulated individually and reset automatically to system time should there be current interruption. The system also provides for the automatic sounding of time signals, and, through an adapter unit, for the operation of minute impulse equipment such as attendance time recorders, job cost records, and time stamps.

The high speed electric punched card accounting machine prints three lines of information from one IBM card, and can also list, cross-add, or cross-subtract several amounts simultaneously from one card. Output of the machine has been increased.

The attendance time recorder is now provided with steel type wheels of new design, which in conjunction with finely woven ribbon, automatically advanced and reversed, eliminates ink bleeding. The machine can be furnished for individual operation on supervised alternating current or from direct current, or from any IBM electric time system. It reads directly in hours and minutes, printing all time indications on the front of the card.

Program control is on a minute-tominute basis for maximum flexibility in (Please turn to page 252) THE MARK OF EXCELLENCE ON FINE OFFICE FURNITURE



Ores LINE

by: SECURITY STEEL EQUIPMENT CORPORATION

AVENEL, NEW JERSEY

A CRESTLINE LABEL

CRESTLINE equipment has been carefully developed to meet the exacting demands of the modern office. To efficient

planning and beautiful design, Security has added the

vital ingredients of skillful workmanship and peak quality materials to provide you with finer office furniture for the office of today and many tomorrows.

For an individual unit or a complete office installation . . . look first to the finest . . . to equipment bearing the CRESTLINE Label.

SECURITY STEEL EQUIPMENT CORPORATION, AVENEL, NEW JERSEY





As a rule, Purchasing Agents are not "coupon clippers" . . . neither is it our policy to send samples, but . . .



66

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ALL

ERASER

A.W.FABER

is so important to the efficiency of your typists, clerks, bookkeepers and executives, that we will gladly send you one of our wood-encased eraser beauties so you can test it for every erasing need—pencil, ink or typewriting.

EraserStik is the modern way to erase. Sharpen it with knife or mechanical sharpener and in seconds you have fresh, clean eraser stock. EraserStik gets into tight places, erasing one letter of a word without smearing surrounding area. Fewer letters need re-typing when EraserStik is used. Write today for free sample.

7099 without brush 10c 7099B with brush . . . 15c

a trifling cost for greater office efficiency.

THE FIRST, THE ORIGINAL, THE GENUINE WOOD-ENCASED ERASER.



(Continued from page 250) connection with complex schedules. The program unit automatically controls all movements within the recorder, including the "in" and "out" registrations, day to day changes, ribbon color changes, and the sounding of signals.

The automatic line selector for the electric typewriter automatically spaces continuous forms of widely varying sizes. It provides for automatic spacing at the touch of a key to as many as nine positions within a form, and also provides for spacing automatically from form to form.

SAMPLE BOOK OF BOND PAPERS

Correct Bond sample book is being distributed by the Aetna Paper Co. Division of Howard Paper Mills, Inc., Dayton, Ohio. The book contains samples of all available standard weights in eight colors and white, and ivory substance 20. There are 24 sheets of samples in the book which also lists the special finishes available.

PLASTIC NUMERAL WHEELS IN COUNTING MACHINE



Numeral wheels of Tenite plastic are one of the features of model AR counting machine made by the F. B. Redington Co., Chicago 7, Ill. The wheels are double injection molded in black and white, the white letters first being molded in one die, and then transferred to a second die where the black background is injected around them. The colors will never wear off or chip. The plastic wheels replace steel wheels over which a strip of nickel-silver was mounted. The plastic wheels, molded by the Gits Molding Corp. of Chicago, are of cellulose acetate butyrate Tenite, and eliminate finishing operations formerly required on the metal wheels.

NEW CHICAGO MANAGER ANNOUNCED BY McBEE

Ralph E. Sweeney has been appointed manager of the Chicago office of the Mc-Bee Company, manufacturers of special accounting methods and equipment, replacing E. R. Freed who was named Pacific Coast divisional manager sometime ago. Mr. Sweeney previously was assistant controller of the Andrew Jergens Company of Cincinnati.

(Please turn to page 254)

Where to get

NEW ITEMS— NEW SOURCES OF SUPPLY...



A specialized buying directory designed and built for production, purchasing and engineering executives—to assist them, in the easiest manner, to secure sources of supply for all equipment, products or supplies used by industry.

Compact, complete and yet easy to handle—that's CONOVER-MAST PURCHASING DIRECTORY.

Five separate sections make up this directory—A Classified Section, containing the names and addresses of manufacturers classified by product—A TRADE NAME SECTION, listing alphabetically the trade name of the product with name and address of the manufacturer—An Addresses of American manufacturers—A Chemical Section, listing by product the name and address of important manufacturers—A Mechanical Data Section, giving 34 pages of helpful tables, formulas, etc.

Use Conover-Mast Purchasing Directory! You'll really like it.

If by chance you haven't a copy, write us. We want every industrial buyer to have the benefits of this handy purchasing reference.

Incidentally, mentioning Conover-Mast Purchasing Directory, when sending out inquiries, means much in helping to increase our service to you.



PURCHASING DIRECTORY

333 N. Michigan Ave., Chicago 1, Ill. A Conover-Mast Publication

FORMERLY
PLANT PURCHASING DIRECTORY

Your layouts will come to life when the job is printed on

TICONDEROGA OFFSET

Lithographers and letterpress printers who are using this new and brilliant offset paper by International have found that it sets new standards for beauty and faithful reproduction. International Paper Company, 220 East 42nd Street, New York 17, N. Y. INTERNATIONAL PAPERS



FOR PRINTING AND CONVERTING

Prominent Users of Strathmore Letterhead Papers: No. 79 of a Series.



THE NEW "20th CENTURY LIMITED" MEETS
MODERN NEEDS

... Does your letterhead do this?

One of the oldest American railroads, the New York Central System is also one of the most progressive. Witness its new "20th Century Limited"—latest word in passenger convenience, with its rooms convertible for business conferences...its radio phone, secretary and barber-valet on tap for traveling executives...its spacious lookout lounge for relaxation.

Significantly, like many other leaders of industry, the New York Central System uses a Strathmore letterhead paper. Its officials realize the importance of creating a fine impression in every phase of business, from railroad cars to correspondence.

How well does your letterhead express the vitality and dynamic quality of your organization? If your present letterhead falls short of representing your company in today's terms, ask your printer to submit new designs on Strathmore paper.

Strathmore Letterhead Papers: Strathmore Parchment, Strathmore Script, Thistlemark Bond, Alexandra Brilliant, Bay Path Bond, Strathmore Writing, Strathmore Bond.

STRATHMORE MAKERS OF FINE PAPERS

Strathmore Paper Company, West Springfield, Massachusetts

NEW ELECTRIC TYPEWRITER INTRODUCED BY REMINGTON RAND

"Remington Electric Deluxe" is the name of new electric typewriter being introduced by Remington Rand Inc., 315 Fourth Avenue, New York, N. Y. The new machine is described as an all-purpose typewriter, and 't is made to fit all standard typewriter desks.

The new machine has been engineered throughout to enable operators to achieve maximum typing efficiency, and a new type face known as the "Remington Rand type" has been developed especially for it. The usual Pica and Elite typefaces are also available, though the new typeface is said to make for faster reading and clearer copies.



The Remington Electric Deluxe. All controls are on panel facing the operator. Finger-fit keys are designed to produce maximum speed with minimum operator fatigue.

Especially notable is the centralization of all controls onto one panel which faces the operator and is immediately at her fingertips. Other distinctive improvements include the constant-speed electric motor which insures uniformity of speed and type impression regardless of any externally caused drain on power sources, and a scientifically engineered keyboard wherein the finger-fit keys are "molded to conform to the operator's fingers." This is designed to produce maximum speed of operation with minimum operator fatigue.

The new machine makes its debut to the business world just 75 years to the month after the introduction of the world's first typewriter, the Remington Model 1, according to H. V. Widdoes, general manager of the typewriter division.

FREE BOOK ON FRAUD PREVENTION

How to Guard Against Loss Through Error, Negligence or Fraud—that is the title of 16-page booklet published by the Cummins Business Machines Corp., 4740 Ravenswood Ave., Chicago 40, Ill., and available without cost, which discusses losses in business and suggests ways of preventing many of these losses. It contains ideas that will be of interest to practically every business man, and is illustrated to show how controls can be strengthened to guard against fraud or other losses.

See Purchasing Classified Section Page 344



Difference!

You get GREATER SPEED,
with ACCURACY,
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ADDING-FIGURING MACHINE

Need a balance...or a total?

You'll get it faster on an Underwood Sundstrand Adding-Figuring Machine.

That's because an Underwood Sundstrand is a smooth operating, precision instrument . . . with the world's fastest keyboard.

No confusing maze of buttons. Just 10 numeral keys grouped in natural sequence under the fingers of one hand.

Even untrained personnel develop the "touch method" in a few minutes . . . keep their eyes on their worksheets . . . acquire high speed in a few hours.

And, what versatility . . . for every kind of business . . . for every kind of problem. Made in single or duplex all-electric models. Manual models, too. Capacities from 6 to 13 columns.

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A PROCUREMENT PLAN

Designed to fit the needs of every Purchasing Agent—from the very largest to the smallest firm.

THREE EXCLUSIVE FEATURES

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- 2. F.O.B. Your Office
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We take pleasure in introducing through this medium a simplified and economical plan, limited, for the present, to those firms requiring delivery in the following 18 States:

Alabama Arkansas Florida Georgia Illinois Indiana Kentucky Louisiana Mississippi Missouri North Carolina Ohio Oklahoma South Carolina Tennessee Texas Virginia West Virginia

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JOHN KILEY JOINS JAMES FLETT ORGANIZATION

John T. Kiley, manager of O. Hodgkins and Co., Boston waste paper dealers, has been named manager of the Boston division of the James Flett Organization, Inc., with offices at 75 Federal St., Boston, Mass. The Flett organization serves various manufacturing and business concerns as scrap sales agent, and is said to handle 10 to 15% of the industrially produced scrap paper and a sizable portion of the metal scrap.

1 1 1 CUSHION KEYTOPS INDICATE GUIDE FINGER POSITIONS

New style rubber cushion typewriter keytops, which especially shaped guide keys that indicate the home position on the key-



board and enable typists to type with greater confidence and accuracy are announced by the Underwood Corporation, 1 Park Avenue, New York, N. Y.

1 1

PENCIL SHARPENER FOR STANDARD SIZE PENCILS



Illustration shows pencil sharpener known as the new Midget, announced by the Automatic Pencil Sharpener Co., Rockford, Ill. It is equipped with solid steel twin-milled cutters, and is designed to sharpen standard size pencils only.

B. C. CANCELL NOW WITH ST. REGIS PAPER CO.

Benton R. Cancell has resigned as vice president of the Powell River Co., Ltd., and rejoined the St. Regis Paper Co., as general manager of manufacturing of the printing, publication and converting paper division, with headquarters at Deferiet, N. Y.

(Please turn to page 259)





will simplify your direct mail addressing problems

- 1. Duplicate labels (2 to 4) can be typed in
- 2. Office typist can address small mailing lists.
- For frequent mailings from name list quantities can be run off on office ditto or mimeograph machines.
- Ideal for addressing large envelopes, sample packages, etc.
- Keep a quantity of your return address labels to place on envelopes and postal cards.
- For sealing and addressing folders, broadsides, double postal cards, etc., in one operation.

Letter size sheet of 33 perforated labels. Choice of 5 "keying" 50¢ package colors.
On sale at your stationer.

On sale at your stationer. For application to your direct mail problems write



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More Work in Less Space,

Better Work from the Same Staff

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Sled Base for greater ease and comfort. Saves aisle space, facilitates cleaning, protects legs.



Adjustable Height reduces fatigue, accomodates desk to most comfortable working position.



Softone Finish cuts down eye strain, blends handsomely with contemporary decoration.



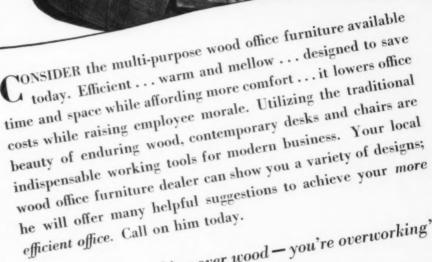
Space - Saving Sizes Smaller overhang minimizes unused areas, re-



Modern Posture Chairs step up office output, reduce physical discomfort, bolster morale.



Streamlined Designs eliminate sharp edges, protect hosiery and clothing.



"If you're not working over wood - you're overworking"

WOOD OFFICE FURNITURE INSTITUTE: ALMA DESK CO. • CLEMCO DESK CO. • COMMERCIAL HIGH CO. • GUNN FURNITURE CO. • HIGH DESK CO. • GUNN FURNITURE CO. • DOTEN-DUNTON DESK CO. • IMPERIAL DESK CO. • JASPER DESK CO. • JASPER OFFICE OFFICE OFFICE CO. • JASPER CO. • MURPHY CO. • MURPHY CO. • MYRTLE DESK CO. • NEW INDIANA CHAIR CO. • WELLS FURNITURE MEG. CO. • MYRTLE DESK CO. • NEW INDIANA CHAIR CO. • WELLS FURNITURE MEG.





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Wood Office Furniture Institute Suite 15 730 Eleventh St., N. W., Washington 1, D. C. Send "Efficient Office" booklet to:

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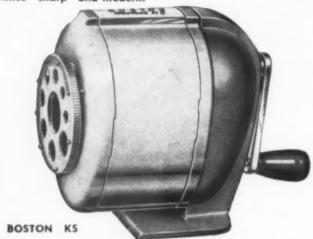
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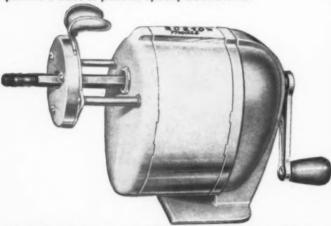
THEM OVER

THEY'RE STREAMLINED IN ALL METAL

The new Bostons are handsomer—and more rugged with all-metal construction for longer life. Let Bostons keep the office "sharp" and modern.



...gives you more of everything desirable in a pencil sharpener, plus new flowing graceful lines and added strength of all-metal. BOSTON Speed Cutters (15 cutting edges). Guide permits 8 sizes of pencils. Specify BOSTON KS.



BOSTON Self-feeder No. 4 looks mighty smart in this new exterior. This model will save pencil bills by centering pencils accurately, thus preventing waste. Feeds automatically—contains famous BOSTON Speed Cutters—giving 25% more cutting edges. Specify BOSTON Self Feeder No. 4.



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FIRE EXTINGUISHERS

Protect Office ... Auto ... Home

Underwriters approved. Superior rust and corrosion proof construction proved by years of use. Chrome plated. Continuous stream. Brackets for wall or steering column.

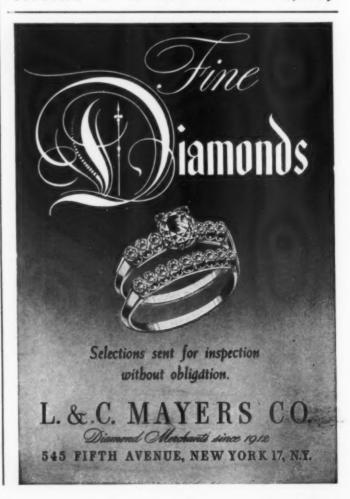
Hotchkiss makes a complete line of desk and plier type paper fasteners. Hotchkiss superior chisel-pointed staples are used all over the world.



Light, durable, all steel. For stapling tags to boxes, barrels and cases, fastening notices on bulletin boards, etc.

At your stationers or write to:

THE E.H. Hotchkiss COMPANY



NEW FLUID DUPLICATOR REPRODUCES BLACK COPIES

A new design in fluid duplicators, is announced by Rex-O-Graph, Inc., 3732 North Palmer St., Milwaukee, Wis. The new design is known as the Lo-Boy Model R. Maker states that it achieves hairline register and handles tissue stock just as easily and effectively as standard weight paper and card stock. And with the use of special carbon and fluid, the machine is said to reproduce "black copies which



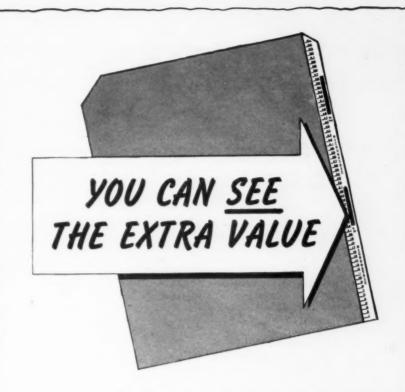
The Lo-Boy fluid duplicator will readily handle tissue stock.

are really black." The machine is featured by wider range of pressure adjustment for varying paper weight from tissue to card stock; automatic counting device, positive automatic paper feed, automatic paper centering, and will handle up to 9" x 16" sheets.

4 1 1 A NEW DEVELOPMENT IN PAPERMAKING

Through the use of a synthetic resin which imparts unusual strength to paper, vast amounts of wood which have been of little use in the production of paper can now be added to the nation's critical supply of satisfactory pulp timber. This new technique in papermaking combines superior dimensional stability with high strength, when using the ordinary commercial wood pulps, and also makes it possible to produce suitable papers from relatively abundant wood species not now fully utilized. The development, growing out of a comprehensive research program at the National Bureau of Standards on offset printing papers, thus points to improved products and the conservation and extension of critical raw materials supplies. Furthermore, it does not involve either appreciable increase in costs or any important change in manufacturing meth-

Deciduous woods such as the maple, beech, birch, or poplar have until now been used only as "filler" in the manufacture of high grade printing paper. In 1946, for example, wood of this type accounted for only 16 percent of the pulp consumed and in inventory. No matter how desirable their other characteristics may be, the deciduous woods do not produce the primary qualities of strength and resistance to surface pick, in the usual methods of proc-The development of strength ess ng. through the use of the synthetic resin, melamine formaldehyde, will have the effect of materially increasing the use of the short-fibered pulps.



Your own eyes are all you need to prove the extra value of Webster's Micrometric Carbon Paper. A scale, actually a part of each sheet, helps secretaries do neater, faster work. The scale warns them as they approach the bottom of the page, assures well-spaced letters and reports at the first typing.

Micrometric has national acceptance by secretaries and office managers in modern offices everywhere. It's available in a variety of weights and sizes. When you buy with an eye for top performance, remember that the Webster line includes carbon papers and typewriter ribbons, both cotton and silk; duplicating carbon papers and accessories; ribbons and carbons for Elliott-Fisher, Addressing, and International Business Machines. Write to F. S. Webster Company, 7 Amherst Street, Cambridge 42, Massachusetts — or contact our warehouse in any one of the cities below.

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Typewriter Ribbons and Micrometric Carbon Papers

Webster's warehouses in key cities from coast to coast: New York, Philadelphia, Pittsburgh, Detroit, Chicago, San Francisco, Cambridge

Among the ASSOCIATIONS

N.A.P.A. Education Committee Announces "How To Buy" Competition For Members

THE National Committee on Education of the National Association of Purchasing Agents has announced the rules governing this year's "How To Buy" competition among the membership. The object of the contest is to encourage general interest in Purchasing Education, to develop information for incorporation in "How To Buy" courses and to stimulate practical thinking on "How To Buy".

Three prizes of \$250.00 each will be offered for the best manuscripts prepared by N.A.P.A. members. Rules as announced by the Development Committee on "How To Buy", headed by W. B. Wight, chairman, and W. L. Thompson, are as fol-

lows:

PARTICIPATION

Participation in this competition is limited to members of N.A.P.A. with the exception of members of the "How To Buy" Committee. Two or more members may collaborate in the preparation of a single paper, by meeting the requirements for "Form of Manuscript", and any prize awarded to such a jointly-prepared manuscript will be divided among the authors.

Subject Matter

All manuscripts must deal with the subject of "How To Buy". Topics may be selected from the following list of commodities or specific subject headings:

Manufactured

Coke
Casein
Paraffin Wax
Alcohol
Aluminum
Plastics
Solvents
Phenol
Formaldehyde
Butane
Dyestuffs
Magnesium
Rayon Fibers

Mined

Paper

Lead Tin Mica Zinc Manganese Graphite Copper Asphalt Asbestos Coal

Fuel Oil

Grown

Cotton

Rubber
Naval Stores
Shellac
Lumber
China Wood Oil
Wool
Hides
Animal and Fish
Oils
Gums and Rosin
Silk
SEMIFINISHED MATERIALS
Phenolic Laminates
Aluminum Alloys
Copper Base Alloys
Paints & Lacquers

Phenolic Laminates
Aluminum Alloys
Copper Base Alloys
Paints & Lacquers
Gaskets & Packing
Coated Textiles
Leather
Textiles
Borax

Boric Acid Steel

COMPLETELY MANUFACTURED COMPONENTS

Screw Machine Products

Castings

Plastic Molded Parts Valves and Fittings Motors and Controls

Screws, Nuts and Bolts

INDUSTRIAL SUPPLIES

Expendable Tools

Lubricants

Cleaning Materials

Safety Clothing

Belting Sponges

Brushes and Brooms

Office Supplies

Printed Matter

MACHINE TOOLS

SUBCONTRACTS

PACKAGING AND CONTAINERS

The emphasis in manuscripts should be placed upon the presentation of pertinent techniques, devices and tools used by the buyer in the efficient procurement of the commodity or topic around which the discussion is centered. Information on chan-

(Please turn to page 262)

Governmental Purchasing Conference at Philadelphia — October 17-20

The Third Annual Conference and Products Exhibit of the National Institute of Governmental Purchasing will be held at the Hotel Bellevue Stratford, Philadelphia, October 17, 18, 19 and 20.



W. Z. Betts

President W. Z. Betts, who is director of the State Division of Purchase and Contract, Raleigh, N. C., states that a program has been planned that is designed to help all public officials concerned with public procurement. In addition to the conference program, there will be an industrial exhibit embracing a large number of informative and educational displays, and, a special program of entertainment for the wives and

daughters of delegates, registrants and exhibitors.

Howard E. Stern, Director of the Department of Supplies and Purchases of the City of Philadelphia is General Conference Chairman; and Joseph W. Nicholson, first vice president of the NIGP and City Purchasing Agent of Milwaukee, Wis., is Program Chairman. Wm. H. Stilz, vice president, Louis E. Stilz & Brother Company, Philadelphia, is chairman of the Exhibitors Advisory Committee.

Sunday, October 17, will be devoted to registration opening at noon at the Bellevue-Stratford, meeting of the Board of Directors of NIGP, and informal dinner and entertainment for early arrivals.

October 18, among other activities, will feature a forum discussion on Standards and Specifications. And on the morning of the 19th, a report on the salaries and responsibilities of Public Purchasing Agents will be presented. This report, based on a national survey conducted by the NIGP will be followed by a forum discussion. Two other features of especial interest during the Tuesday sessions will be a forum discussion on eliminating bid deposits and performance bonds, and a

(Please turn to page 264)

Only GOULD

A modern research
laboratory with
pilot manufacturing plant
where advance-design batteries
are constantly created
and proved before production.

Goold's Plat Plant is a complete experimental-scale manufacturing plant in which edvance-design betteries are pre-tested and proved he here commercial release.

The Pilot Plant is where all Gould developments prove their commercial worth. Each advance of research must prove itself . . . must prove to be practical. Here, Gould has already made advances in methods of die-casting and in the use of powdered metals, and has done revolutionary work in the improvement of gravity casting. Here, present batteries are being perfected and tomorrow's advance-designs are being created. Another reason why the better batteries come from GOULD—FOR FIFTY YEARS THE CHOICE OF ENGINEERS.



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GOULD

STORAGE BATTERY CORPORATION

Including the Storage Battery Division
of Philos Corporation

TRENTON 7, NEW JERSEY

Always Use Gould Automobile and Fruck. Batteries

(Continued from page 260)

nels of distribution and pric ng practices should be included in any commodity discussion. The objectives of the competition do not include emphasis upon general procedures, routines or basic buying principles and policies.

Time of Competition

Manuscripts must be placed in the office of the National Association of Purchasing Agents, either by messenger or by registered mail, first-class, not later than noon on December 1, 1948.

Awards and Prizes

The N.A.P.A. National Committee on Education will appoint competent judges who shall be members of N.A.P.A. and their decisions shall be final. These judges will award, at the 1949 N.A.P.A. Convention, three prizes of \$250.00 each to the contestants whose papers, in the minds of the judges, best fulfill the rules of this competition.

Rules for Judging

All committees, whether preliminary or final, will judge each paper on the following basis:

(1) Originality of Thought-35 points

(a) Evidence that independent study and research have been utilized.

(b) New concepts, original thinking with respect to the treatment of any commodity or subject.

(2) Merit of Content-50 points

(a) General usefulness of the "tools" presented.

(b) Practicability of plans or techniques presented for use by the buyer.

(c) Soundness and logic of the conclusions reached. (d) Cred bility of the facts submitted, as determined by bibliography and other source references.

(3) Organization and Presentation—15 points
Emphasis will be placed upon the logical treatment of fact presentation and of
evidence, both pro and con, and clarity
of the conclusions reached.

Form of Manuscripts

Each manuscript must be typed on one side of the sheet, double spaced, on white paper 8½ x 11 inches. Its length shalf not exceed 50 pages, including charts and tables.

A complete b'bliography of reference material and statistical sources used must be included

Each competitor must inscribe his manuscript with an assumed name and in an accompanying plain, sealed envelope, addressed to the Secretary of the National Association of Purchas ng Agents, 11 Park Place, New York 7, N.Y., give his real name, company and home address, N.A.P.A. District, and Association. The accompanying envelope must be identified as belonging to the manuscript by the inscription of the assumed name on the outside of the sealed envelope.

Manuscripts will be excluded if they do not comply fully with the rules governing the contest, or if the author's true name or company in which he is employed is revealed in any way.

Ownership of Manuscripts

All manuscripts submitted for this competition shall become the property of the Nat'onal Association of Purchasing Agents for such use as the Association may decide to make without compensation to the author.

TRI-STATE ASSOCIATION SEES "COLOR IN INDUSTRY"

The season's first regular meeting of the Tri-State Purchasing Agents Association was held at the Prichard Hotel, Huntington, West Virginia, on Thursday, September 21. Feature of the program was a moving picture, "Color In Industry", prepared by the E. I. duPont de Nemours Co. V. H. Moore was commentator.

MONTREAL ASSOCIATION HAS ANNUAL GOLF TOURNAMENT

The annual fall golf tournament of the Purchasing Agents Association of Montreal was held at the Bonnie Brook Golf Club, St. Columban, on September 10. Dinner was held in the club following the day's play. Andre Rolland and Alan Potter comprised the committee in charge of the affair.

KALAMAZOO ASSOCIATION SEES FILM ON ALUMINUM

The regular meeting of the Kalamazoo Purchasing Agents Association was held at noon at the Columbia Hotel, Kalamazoo, Mich., August 26. Glenn Morrison, Brundage Co., was chairman. Feature of the meeting was a film entitled "Aluminum Production", presented by John Richman of Reynolds Metal Co.

TULSA ASSN. HOLDS ANNUAL BAKER PLANT VISIT

In keeping with a tradition started fifteen years ago, the Purchasing Agents Association of Tulsa opened its fall season with a visit to Baker Oil Tools, Inc., where a reception and dinner was held on September 14. As in former years a fine program was offered by the hosts. Attendance at the affair was limited to association members and those in their departments.

4 4 4 SYRACUSE & CENTRAL N. Y. ASSN. IN PLANT VISIT

On September 15, members of the Purchasing Agents Association of Syracuse and Central New York held a plant visit at Oneida, Ltd., manufacturers of silver table service. After touring the factories of the company in the morning, the visitors were treated to an afternoon of golf, swimming and other sports. The late afternoon and early evening program featured a trip to the lake shore recreation spot of the company.

7 7 7 SOFTBALL GAME FEATURES LOUISVILLE ASSN. PICNIC

A softball game between the Purchasing Agents Association of Louisville and a team of local salesmen featured a recent picnic of the association at Rockford Gardens. Fred Pfeiffer, Jr. led the purchasing agents, and R. L. Schmidt the salesmen.

Second Annual Sixth District Conference Success At Cincinnati

The second annual Purchasing Agents Conference, Sixth District, held on September 27 and 28 at the Gibson Hotel, Cincinnati, O. proved to be a highly successful affair that drew large attendance from member associations in the district. Following suggestions made by the associations, the conference featured more commodity discussions and fewer speakers than previously. The Cincinnati Association of Purchasing Agents played host for the conference.

The program opened Monday morning with a call to order by J. J. Mullen, president of the Cincinnati Association, and Purchasing Agent, Ilsco Copper Tube and Products Co. Following the invocation by John Lamy, D.D., Clifford F. Rehse, general chairman, introduced Louis G. Pochat, program chairman. E. B. Gallaher, treasurer and general manager, Clover Mfg. Co., Norwalk, Conn., then spoke on "Current Economic Trends". Under the chairmanship of B.D. Henderson, Purchasing Agent, Westinghouse Electric Corp., Sharon, Pa., a panel of speakers next discussed "Purchasing And Cost Reduction". Participating in the discussion were; E. Carlisle, Purchasing Agent,

Pittsburgh Plate Glass Co., Pittsburgh, Pa.; V. G. Lottman, Director of Purchasing Research, Ford Motor Co., Dearborn, Mich.; J. D. Hogg, Purchasing Agent, Cleveland Electric Illuminating Co., Cleveland, O.; Burton Lang, Purchasing Agent, A. P. Parts Co., Toledo.



Joseph J. Mullen

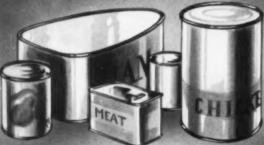
After luncheon a discussion on "Lumber and Building Material" was held under the chairmanship of Thos. Dougherty, Dougherty Lumber Co., Cleveland, O. Speakers were: Arthur Hood, editor, "The (Please turn to page 266)

when you need TIN MILL PRODUCTS

QUALITY



ELECTROLYTIC TIN PLATE



HOT DIP



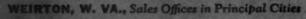
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COMMITTEE CHAIRMEN NAMED BY NEW YORK ASSOCIATION

The following committee chairmen for the 1948-1949 term have been named by the Purchasing Agents Association of New York:

Advisory-F. Albert Hayes, Bigelow-Sanford Carpet Company, Inc.; Attendance—M. D. MacBurney, Barrett Division, Allied Chemical & Dye Corp.; Auditing—James Wilson, Jr., Mutual Life Insurance Company; Commodity Reports —John F. Snedeker, Sr., Binney & Smith Company: Dinner-Ernest G. Jaehne, New York Stock Exchange; Education-Benedict Van Voorhis, E. I. duPont de Nemours & Company; Eligibility—W. C. Gretsch. Jr., The Maltine Company; Gretsch, Jr., The Maltine Company; Membership—Frank R. Junier, Coty, Inc.; Forum-C. O. Minot, A. H. Bull & Company, Inc.; Nominating-Harold K. La-Rowe, American Cyanamid Company; Outside Activities—Walter M. Hoffman, American Oil & Supply Company; Program-G. W. Howard Ahl, Columbia Ribbon & Carbon Mfg. Co., Inc.; Public Relations. Reception—G. Everett McMillen, Town of Montclair.

NOTED RABBI GUEST AT CHICAGO ASSN. MEETING

The regular meeting of the Purchasing Agents Association of Chicago was held on Thursday evening, September 9, at the Hotel Sherman. Speaker of the evening was Dr. Louis L. Mann, Rabbi of Chicago Sinai Congregation and world famous speaker and scholar. His topic was "Cbstacles to Human Understanding".

TWIN CITY ASSOCIATION HOLDS PLANT VISIT

Members of the Twin City Association of Purchasing Agents visited the plant of the Lewis Bolt and Nut Company, Minneapolis, Minn. on September 15. The visit was arranged through Al Bury and W. G. Hartman, former member of the association and now president and general manager of the company. Mr. Hartman played host to the visitors later in the afternoon at a cocktail party in the Saint Paul Athletic Club.

The main meeting of the group was held that evening in the club. Featured at the meeting was a motion picture recently produced by the American Hot Dip Galvanizers' Association, and entitled "Must It Rust?"

PUBLISHER ADDRESSES NEW ORLEANS ASSOCIATION

1 1 1

The regular monthly meeting of the Purchasing Agents' Association of New Orleans was held at the Jung Hotel on Monday, September 13. Speaker of the evening was Ralph Nicholson, owner and publisher of the "New Orleans Item", whose subject was "National Politics as They Look Today". A large number of guests attended the affair.

JACKSON ASSOCIATION GETS 32 NEW MEMBERS

A membership drive by the Purchasing Agents Association of Jackson, Mich., has resulted in the signing of 32 members, according to an announcement by C. W. Riley, membership chairman. The drive for additional members will continue. T. J. McIntyre, president of the Macklin Co., was guest speaker at a recent meeting.

MISSISSIPPI ASSN. HAS EDUCATIONAL MEETING

The regular meeting of the Mississippi Association of Purchasing Agents was held on September 14 at the Heidelberg Hotel, Jackson, Miss. The meeting was conducted under the auspices of the educational committee, headed by Fred Dupree and featured a discussion of "pertinent purchasing pointers".

(Continued from page 260)

paper on the organization and operation of the new Department of Purchase, Contract and Stores of the City of Chicago.

October 20: The Wednesday sessions will open with a paper presenting results of a recent practical survey in a public buying agency, on Procedures and Systems in a Public Purchasing Office; and, a report on the Fiscal Aspects of Public Buying, this being an overall view of administrative progress in fiscal agencies and public buying units. There will also be a round table discussion on Purchasing on Specification, Performance and Brand.

Entertainment for the ladies will include Sunday "Brunch", and Sunday evening informal dinner and entertainment; trip to historic shrines; tea at the Philadelphia Art Museum; conducted tour of the John Wanamaker Company store; special inspection of the NIGP products exhibit; and luncheon at a Philadelphia Country Club followed by a trip to Valley Forge.

Membership Ballot Used by New Orleans Assn.

OFFICIAL BALLOT

Purchasing Agents Association of New Orleans, Inc.

,1948

Those whose names appear below have duly filed the proper application form for membership in the Purchasing Agents Association of New Orleans, Inc., have been reported on favorably by the Membership Committee and are offered for election:

Name	For	Against

To vote, mark "I" in the "FOR" or "AGAINST" Column
A majority of two-thirds required to elect

The accompanying form is that of the Official Ballot used by members of the Purchasing Agents Association of New Orleans, La., for voting upon applicants for association membership whose applications

have been passed upon by the Membership Committee. Ballots are distributed at a meeting, following report of that committee. It will be noted that a majority of two thirds is required to elect a member.

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WOLF PORTABLE ELECTRIC TOOLS



HALF A CENTURY IN 50 WORLD MARKETS WINNING RECOGNITION FOR HIGH QUALITY

NOW AVAILABLE - FOR IMMEDIATE DELIVERY

SD4C 1/2" STANDARD DUTY DRILL

- FOR
- **PRODUCTION** MAINTENANCE
- CONSTRUCTION

- AIR-COOLED
- UNIVERSAL 110-120 VOLTS
- 3-WIRE RUBBER CORD INCLUDING GROUND LEAD

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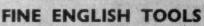












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Experience of steam trap users has proved that, for smoother operation, open bucket type traps are superior for all-round service.

New "Cub-Jr"—ideal wherever a small, reliable trap is required

For the many and varied applications where a small, efficient trap is desirable, the new "Cub-Jr." is the ideal, all-purpose, double-duty trap to use for the prevention of production troubles caused by water-lagged equipment. Its use shortens warm-up time on steam-using processes. It will handle up to 2000 pounds of condensate per hour on continuous discharge. Overall dimensions of trap are 31/4" x 51/2".



New "Cub-Jr"
Open Bucket Type
Steam Trap
Pressures to 125 psi

All "Cub" Traps discharge both air and condensate

It is not enough, that a WRIGHT-AUSTIN "CUB" steam trap shall efficiently remove air and condensate from service lines—it must be qualified to live up to the expectations of every user. That it does this is proved by the large volume of repeat orders.

These are the qualities you will find in "Cub" open bucket type steam traps—qualities which contribute to world-wide acceptance and use:

Double Rating on continuous discharge No Waste of Steam Stainless Steel valves, seats and buckets

Easy to Install
Water Seal entirely within trap

All sizes of "Cub" Steam Traps except "Cub-Jr." are suitable for pressures up to 250 psi. Other types of Airxpel Steam Traps available for pressures up to 700 psi.

You'll find complete details in Circular 259-A.

Send for a copy today



No. 52 "Cub" Airxpel Open Bucket type Steam Trap

Inside the "Cub"

This view shows the inside water seal which prevents waste of steam. It shows also straight through pipe connections and accessibility of valve and seats.

Send for Circular 259-A
WRIGHT-AUSTIN COMPANY

337 West Woodbridge St.

Detroit 26, Mich.



WRIGHT-AUSTIN
SERVING INDUSTRY FOR MORE THAN 50 YEARS

Cincinnati District Conference

(Continued from page 262)

American Lumberman"; Meade M. Johnson, sales manager, Yale & Towne Mfg. Co., Stamford, Conn. The next topic was "Paper", with J. O. Gano, Purchasing Agent, Crowell Collier Publishing Co., Springfield, O., presiding. Participants were: George Lawrence, Mead Corp., Dayton, O.; Ralph N. Betts, American Educational Press, Columbus, O.; and K. P. Geohegan, Howard Paper Mills, Dayton, O. The discussion on "Containers" had as chairman L. J. Wernke, Purchasing Agent, Andrew Jergens Co., Cincinnati, O., and featured talks by H. M. Treen, president, Ft. Wayne Corrugated Paper Co., Ft. Wayne, Ind.; R. L. Perin, general sales manager, Central Division, Continental Can Co., Chicago, Ill.; and S. L. Rairdon, vice-president, Owens-Illinois Glass Co., Toledo, O. Chairman of the "Non-Ferrous Metals" discussion was E. F. Jung, Waltz-Dettmer Supply Co., Cincinnati, O., and speakers were: W. A. Armstrong, wholesale division, Chase Brass & Copper Works, Waterbury, Conn.; R. P. Winberg, sales manager, Revere Copper & Brass Co., Rome, N. Y.; L. H. Gray, district manager, Aluminum Company of America, Pittsburgh, Pa.; and Dr. George Perkins, technical director, Reynolds Metal Co., Louisville, Ky.

A banquet was held in the hotel roof garden on Monday night, with E. L. Clayton, Purchasing Agent, Philip Carey Mfg. Co., Cinc'nnati, O., Sixth District vice-president, N.A.P.A., presiding. Ralph Keefer, Purchasing Agent, Aluminum Company of America and National President, spoke on "Our Professional Obligations". James E. Gheen, New York, N. Y., gave an address entitled, "Little Do We

Know".

The second day's session opened with a discussion on "Fuels", with T. W. Marz, Purchasing Agent, Newport Rolling Mill Division, International Detrola Corp., Newport, Ky., as chairman, and Charles Dorrance, president, West Virginia Coal & Coke Corp., as featured speaker. The "Industrial Chemicals" discussion followed with Andrew Lincoln, Purchasing Agent, Wm. S. Merrell Chemical Co., Cincinnati, O., as chairman. Principal speakers were: Dr. L. S. Roehm, manager, Technical Service, Dow Chemical Co., Cleveland, O. and Clayton Wolfe, Vice President, Director of Purchases, Monsanto Chemical Co., St. Louis, Mo. The closing discussion was on "Iron and Steel", for which Jac Breese, vice-president, Breese Bros., was chairman. Participants included: L. M. Allen, vice-president, Allegheny Ludlum Steel Co., Pittsburgh, Pa.; Dr. G. V. Slottman, technical advisor, Air Reduction Sales Co., New York, N. Y.; and J. A. Ingwersen, Armco Steel Corp., Middletown, O. The conference adjourned at

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AVAILABLE THROUGH YOUR ALCOA DISTRIBUTOR?

Know-how is an important part of every distributor's sale of Alcoa Aluminum. For your Alcoa Distributor is a specialist—ready to aid you with your own problems of utilizing Alcoa Aluminum in the most convenient and economical form possible.

And back of your Alcoa Distributor stands Alcoa's own engineering service, ready to help you work out your aluminum alloy problems of specification, fabrication, shop practice, or finish. This kind of help is readily available from the distributor nearest you. Make a note of his name and phone number now. Aluminum Company of America, 1931 Gulf Building, Pittsburgh 19, Pa. Sales offices in principal cities.



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Cambridge, Massachusetts Whitehead Metal Products Co., Inc. Phone: TRowbridge 6-4680

Charlotte, North Carolina Edgcomb Steel Company Phone: 4-9768

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PROF. H. T. LEWIS GUEST AT NEW YORK ASSN. MEETING

The Purchasing Agents Association of New York held its first meeting of the new season at the Builders' Exchange Club on Tuesday, September 21. Speaker of the evening was Howard T. Lewis, Professor of Marketing, Graduate School of Business Administration, Harvard University, and noted author and consultant on business.

Professor Lewis' subject was "Where Do We Go From Here", an analysis of the factors influencing the economy today, and what they may be expected to produce in the future.

The afternoon pre-meeting forum had as a topic, "The Current Fuel Oil Market; The Supply and Demand Outlook for the Coming Winter". The guest speaker was David L. Barrett, manager, Fuel Marketing Division, Esso Standard Oil Company. Millard W. Merrill presided. A "March of Time" motion picture, "Music in America" was shown following dinner.

LOS ANGELES ASSOCIATION COMMITTEE CHAIRMEN

The Purchasing Agents Association of Los Angeles has announced the following committee chairmen for the coming year: Publication—Percy J. Keith, W. P. Fuller & Co.; Membership—R. W. Henderson, Baker Oil Tools, Inc.; Noon Luncheon-George A. Cumming, Housing Authority of City of Los Angeles; Acquaintance and Reception-E. Benton Long, United States Lime Products Corp.; Plants Visit—Edwards H. Metcalf, Standard Felt Co.; Oil Company Buyers—Norwood D. Tichenor, Standard Oil Co. of California; Governmental Buyers—J. W. Hughes, County of Los Angeles; Public Relations-W. T. Reynolds, Los Angeles Transit Lines; Publicity-Walter M. O'Connor, Johns-Manville Products Corp.; Badges-Merrick P. Winkler, American Brake Shoe Co.; Attendance-Dale E. Wyckoff, Calif., Cornice Steel & Supply Corp.; Courtesy-Sam McFadden, Los Angeles Dept. of Water & Power: Bowling—C. G. Morgan, Sears, Roebuck & Co.; Golf—W. M. Clough, Grand Central Airport Co.; Educational-E. H. Weaver, Union Oil Co.; National Affairs-Virgil D. Waters, Utility Trailer Mfg. Co.; Program-C. H. Tuttle, Standard Oil Co. of

HOUSTON ASSOCIATION HOLDS FIRST FALL MEETING

1 1 1

The first fall meeting of the Purchasing Agents Association of Houston was held on Tuesday evening, September 14, at the Rice Hotel, with non-resident members as guests of honor. A dinner and social hour preceded the special program put on for the visitors, under the guidance of W. J. Peddie, chairman of arrangements.

(Please turn to page 270)

THE NEW TYPE AH

combination motor starter for high-voltage motors with

new longer life

Here is the answer to severe "repeater" duty motor starting—a combination starter for high-voltage motors that assures instant protection... that stands up to millions of start-stop operations with minimum maintenance!

Gives Years of Tough, Repetitive Service

New, longer life operation, new freedom from maintenance is made possible by the heavy-duty Westinghouse Air-Break Contactor. Because it operates in air instead of oil, the new Type AH Contactor increases contact life . . . reduces maintenance to routine checkups. Rating: 5000 volts maximum.

Limits Fault Currents in .002 seconds

Fast-acting Type BAL Fuses protect the circuit against faults beyond the interrupting capacity of the contactor...limit fault currents in 1/8 cycle...completely clear them in 1/2 cycle. Interrupting capacity: 150,000 kva at 2300 volts; or 250,000 kva at 4160 volts, 3 phase, 60 cycles.

Installs Fast and Easy

One all-welded steel cabinet houses the starter and circuit protective components. On-the-job wiring is limited to making connection to line and motor. Standardized cabinets make attractive single or group installations and simplify future addition of control units.

Get the complete facts. Contact your nearby Westinghouse representative today or write to Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pennsylvania.

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- New, longer life, heavy-duty Air-Break
 Contactor
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- Maintenance minimized . . . contact life extended . . . no oil to check or replace
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Остовек, 1948



You can desludge any truck

or bus in your fleet just as

easily and economically. Ask

for details on the Magnus

755 way of desludging.

They Said It Couldn't Be Done ... But It Was!

Desludging an 8-Year-Old Taxi With Magnus 755 Without Tear-Down!

HEY hauled it out one morning—a 1941 job, full of sludge from "stop-and-go" driving, and asked the Magnus man to desludge that one without dismantling! He drained the oil, put in Magnus 755, idled the engine for an hour and drained the crankcase. Flushed and drained, then looked at the engine.

It was clean - screen, pan and engine. Varsol in the oil line ran full flow out of all six lines at once.

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Seats every worker RIGHT - for every job!

You are sure of "height that's right" for every worker when you choose Kewaunee Automatic Adjustable Chairs and Stools. That extra comfort feature has a definite effect on production by lessening fatigue. Split-second adjustment to the right height is made automatically by the worker. Lifting



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NOTED ECONOMIST GUEST AT WASHINGTON WOMEN'S MEETING

The first fall meeting of the Women's Group of the Purchasing Agents Association of Washington was held in Se-attle, Wash. on September 2. The principal speaker was Dr. Nathaneal Engle, Director of the Bureau of Business Research at the University of Washington, Seattle, who discussed the subject, "Economic Outlook for the Northwest". Dr. Engle served for seven years as assistant director of the United States Bureau of Foreign and Domestic Commerce following an appointment by the late President

The speaker pointed out that the world situation would directly and indirectly affect the economics of the section. War would cause another great influx and expansion of industry and population as in World War II, he said. Dr. Engle also discussed present high prices, their background and future.

President Dorothy Brown gave a resume of her trip to the national convention in New York, stressing that women in purchasing have earned a place in the associations, but will have to keep striving to earn national recognition as separate

WASHINGTON ASSN. MEETING FEATURES VARIED PROGRAM

The first fall meeting of the Purchasing Agents Association of Washington was held at the New Washington Hotel, Seattle, Wash., on Thursday evening, September 9. Guest speaker of the evening was Edwin H. Adams, head of the radio department at the University of Washington, whose topic was "Jingles Without **Jangles**

Harold D. Mitchell, Purchasing Agent for Housing Authority of King County and chairman of the association's Business Survey and Commodities Committee, summarized national releases and presented C. B. Holder, Eagle Metals Co., who spoke on "Today's Buying Problems in Non-Ferrous Metals" and Harry I. Thorson, Crown Zellerbach Corp., who spoke on "Today's Buying Problems in the Pulp and Paper Field."

WOODMAN NAMED SECRETARY OF OREGON ASSOCIATION

Don Woodman has been named full time executive secretary of the Purchasing Agents Association of Oregon and editor of the "Oregon Purchasing News," according to an announcement by President R. P. Stockwell, Mr. Stockwell pointed out in making the announcement that the continued growth of the association made it practical to obtain the services of a full-time secretary and editor and added that even more expansion is anticipated.

Mr. Woodman, a veteran newspaperman and editor of the magazine from 1943 to 1945, will maintain offices in his home at 1250 N. E. 51st Avenue, Portland, Ore.

(Please turn to page 272)

Cut out slow costly hand sawing in your plant!

Mr. P.A. Give them what they want ORDER SKIL SAW

Best made ... best known Portable electric saw

get SKILSaw!

IS THERE A HANDSAW IN YOUR SHIPPING ROOM? SKIL Saw cuts crating lumber 10 times

ARE YOU CUTTING METALS WITH HACK SAWS? SKIL Saw cuts flat or corrugated steel, tough plastics, ARE YOU DOING MAINTENANCE SAWING BY HAND? SKIL Saw goes right to each job and does it

Let your SKIL Tool Distributor demonstrate SKIL Saw savings in your plant today! You'll be glad you did! with power...in far less time

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TORONTO ASSOCIATION VISITS CARBORUNDUM COMPANY PLANT

The September 8th meeting of the Purchasing Agents Association of Toronto took the form of a plant visit to the Carborundum Company, Niagara Falls, N. Y. Members were guests of the company at lunch, following which they were taken on a tour through the plant. E. D. Lackey, assistant director, industrial relations, and W. C. Efferick, sales manager of the Canadian Carborundum Company arranged the program.

Dinner was served in the evening at the Niagara Hotel. A film, "Higher Production, Greater Precision Through Grinding" was shown, and Boyd Work, Directory Sales Engineering, Bonded Products,

spoke.

The executives for 1948-49 are: president, George A. Davis; vice-presidents, F. B. Brookbanks, Alan L. Francis, Fred A. Waghorne; directors, A. Elton Clark, J. Michael Dunlevie, Graham W. Garton, C. Edgar Norr's; national director, Harvey T. Sprang; member Canadian Council, J. Russell Speers; honorary secretary, L. Liddle; secretary-treasurer, John Henry Pepper.

COUNTY PROSECUTOR SPEAKS AT TOLEDO ASSN. MEETING

The initial fall meeting of the Purchasing Agents Association of Toledo was held at the Elks Club on Tuesday evening, September 7. The guest speaker was Joel Rhinefort, Lucas County prosecutor.

Committee chairmen for the coming year are: Program-W. Bohn; Publicity -A. R. Smith, Jr.; Membership-Reception-L. F. Middlesworth; Factory Visitation-Vic Miller; Entertainment-Christmas Party-W. P. Hellwig; Golf Party-W. Noe; Auditing-E. Curtis; Education -B. Lang; History-E. J. Brand.

CHICAGO WOMEN'S DIVISION HEARS JOHN P. SANGER

The regular meeting of the Women's Division of the Purchasing Agents Association of Chicago was held on Thurs-day evening, September 9. The guest speaker was John P. Sanger, Vice President in Charge of Purchases of the U.S. Gypsum Company .

1 1 1 WESTERN MASS. ASSN. CHAIRMEN NAMED

Committee chairmen of the Purchasing Agents Association of Western Massachusetts for the coming year are: Programs Membership-Chas. -James Sinclair; Membership-Chas. Healey; Reception-Ben Pringle; Publicity-R. W. Handel; Budget-Al Sanger, Wm. Case, Carl Carlson; Attendance-Fred Martin; Commodities (chairman rotates monthly)—steel, R. Pond; fuel-coal, S. J. Kennedy; fuel-oil, F. D. Bacon; lumber, Ralph F. Beaudry; paper, Fred Hofmann; chemicals, G. M. Bullard; copper, Jos. G. Milner; Forum-Gordon Mc-Rae; Round Table-Geo. H. Gilpatric.

(Please turn to page 276)

NEED Steel Tuling IN A HURRY?



NIKOH

saves time...

Here are new manufacturing facilities that will shortly be producing welded steel tubing, pipe, and electric conduit at the rate of thousands of tons a month.

Although our plant is not yet operating at full capacity, NIKOH commitments are increasing daily. Manufacturers who wish to meet urgent production quotas are sending us steel to be processed into tubing.

Details about NIKOH products are given on the next page. If shortages of steel tubing are threatening your production schedules, it will pay you to consult NIKOH at once.

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CAREFUL TESTING and inspection assure quality, uniformity, and accuracy to specifications.

EFFICIENT PLANT layout and modern handling methods keep down costs and speed deliveries.



WELDED STEEL PIPE ...

Fully tested and inspected . . . quality guaranteed. Available from 3/4" to 6" inside diameter, with wall thickness from .125 to .307 gauge.



WELDED STEEL TUBING ...

Rectangular, hexagonal, round, fluted, and many other regular and irregular shapes—ranging from ½" to 4" outside diameter, and wall thickness from .083 to .150 gauge.

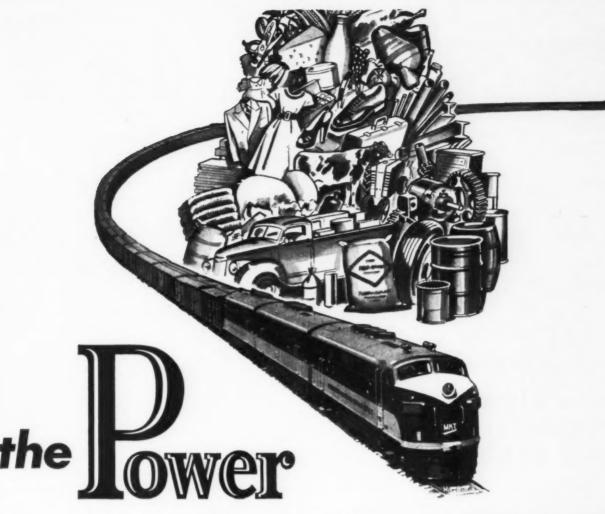


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Plated thin-wall electric conduit in all standard sizes from 0.5" to 2.2". Let us quote on your requirements.



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. hundreds of them, augment Katy's fleet of heavy cargo transportation.



NEW HOPPER CARS

.. available for quick, efficient, versatile service to shippers.



NEW DIESEL POWER

... to expedite transfer of your freight at major terminals and road haul it with speed and economy.

YOURS ON THE

SMOOTH DIESEL POWER... to deliver your goods in perfect condition. High-speed power that permits scheduling to suit your every shipping need.

DIESEL POWERED SWITCHERS ... at important terminals to expedite the transfer of your carloads to markets and factories.

RADIO POWER ... a magic service PLUS to speed handling of your freight.

Katy's equipped for even heavier, longer hauls, smoother handling of your shipments-dependable, on-time service between Texas and Oklahoma and the North. For careful, precision shipping to and from the Southwest...ship KATY!

MISSOURI-KANSAS-TEXAS LINES

Ship Via The Southwest's Main Supply Line

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KATY KOMET

KATY KLIPPER

Daily from Kansas City and St. Louis to all main Southwestern points.

Katy's fastest-Southbound daily from St. Louis to all main-line points.

Daily, St. Louis and Kansas City to Oklahoma and Texas.

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"72" FAST FREIGHT

Daily from Texas and Oklahoma to Kansas City and St. Louis.

Also... Convenient Double Daily Service between St. Louis and Kansas City.





From the start you'll notice how much faster Star Blades cut metals... and with a truer cut, that leaves a cleaner surface. Tough, durable Star Blades lessen "time-outs" on the job, too. You see, every Star Blade is made of finest high-grade steel... precision-set teeth assure fast cutting and full side clearance. You'll appreciate the metal-cutting economies of Star Blades.

Your local jobber or distributor will be glad to help you choose a Star Blade to suit your job, ask him for the NEW Star Wall Chart for your shop...the Star Metal Cutting Booklet for pocket or tool kit—they both contain a world of useful information and are absolutely FREE,



Makers of hand and power hack saw blades, frames, metal cutting band saw blades and the Clemson Lawn Machine. BUSINESS COUNSELLOR GUEST AT METROPOLITAN MEETING

A regular meeting of the Metropolitan Purchasers Assistants Club was held at the Midston House, New York, N. Y. on Tuesday, September 14. Guest speaker for the evening was J. George Frederick, president of The Business Bourse, New York, and well-known management and marketing research man, counsellor and author of books on business. Mr. Frederick's subject was "What Makes A Good Executive?"

Mr. Frederick listed the following points as indicative of a good executive: 1. An orderly mind which thinks of first things first and second things second; 2. Ability to make decisions, never dawdling, procrastinating, hestitating or fearing action; 3. "Quick on the trigger" to get action at trouble spots; 4. Prevents and neutralizes all temperamental interference and difficulty in his organization; 5. Takes the research attitude toward his job, the humble scientific spirit of inquiry and analysis; 6 Never assumes all authority and responsibility but knows how to delegate it competently; 7. Is self-critical. Wants to know that he knows. Doesn't confuse fact with opinion. Demands a lot from himself: 8. Is a good disciplinarian. Understands how to correct others, hold them to the line, develop them by exacting meticulous compliance; 9. Is a good talker. Speaks in clear, simple English, with wellformed tones that carry, in a moderate tempo, with pleasing inflections; 10. He must always, like a good general, take and keep the offensive in driving toward his

7 7 7 CANADIAN P.A.'S CONFERENCE IN MONTREAL OCTOBER 15-16

goal.

The twenty-third Canadian Purchasing Agents' Conference will be held in the Mount Royal Hotel, Montreal, Can. on October 15 and 16, with a record attendance anticipated. J. Bruce Jordan, General Purchasing Agent, National Drug & Chemical Co. Ltd., is general conference chairman.

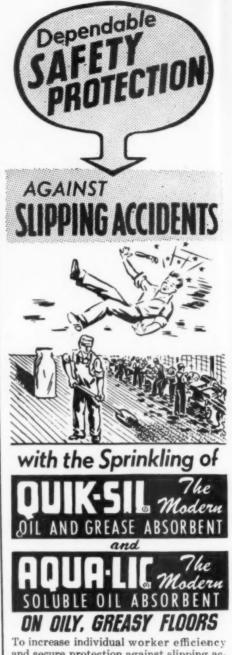
Among the important questions to be discussed at the conference which have helped to bring a large demand for reservations are the government's stockpiling program and its effects on private industry, the defense program, foreign demand for goods, values of foreign currencies, future wage levels, and freight rates.

MEMBERS OF CANADIAN P.A. COUNCIL FOR 1948-49

Following are the members of the Council of Canadian Purchasing Agents Associations for 1948-49:

President, H. D. Caplan, Building Products Ltd., Montreal; immediate past president, George A. Ireland, National Paper Goods Ltd., Hamilton; treasurer, J. G. Brigg, Dominion Textile Co. Ltd., Montreal; secretary, Chas. F. Fullerton, 175 Jarvis Street, Toronto 2. The P.A.A. of Montreal, John Crawford, Sun Life Assur-

(Please turn to page 278)



To increase individual worker efficiency and secure protection against slipping accidents — use dependable QUIK-SIL and AQUA-LIC for anti-skid floors. The former soaks up oil and grease and the latter soaks up water and soluble oils. They cut cleaning costs too, by making floor surfaces easier to clean. Lengthens belting life. Increases life of shoe soles and heels in preventing oil and grease rotting action.

FREE SAMPLES For Proof Test



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Approved by
Underwriters
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Underwriters.

Prove these modern absorbents by actual test. Note the speed with which they dry up slippery oil, grease, soluble oils and water. You'll find them low in cost—profitable investments for your plant.

Write Today!

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Take sheet metal work out of the "tin snip stage", put it on a real production basis with a Stanley UNI-SHEAR. Free skilled labor for more profitable work. Cuts iron, copper, aluminum, zinc, tin, leather, fibre, wire, linoleum...almost anything in sheet

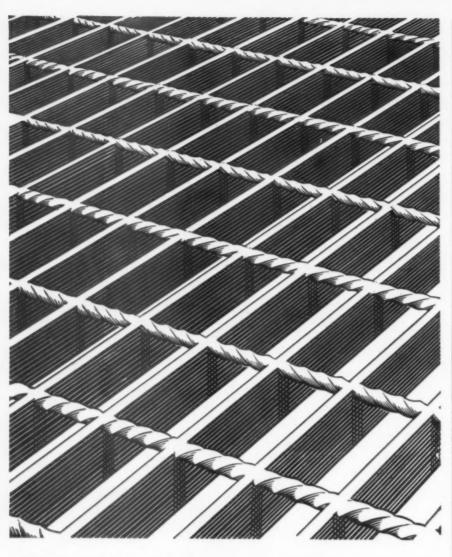
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form. Does hundreds of production and maintenance jobs around the plant...cutting metal and fibre patterns, cutting metal linings, making machine guards, covers, tanks, drip pans, repairing ventilating systems, fabricating spray booths, partitions, shelving, trays, parts boxes and bins. Save time, material and labor. See these hard-working lightweight metal workers at your industrial distributor's and write today for detailed literature. Stanley Electric Tools, 485 Myrtle St., New Britain, Conn.

HARDWARE . HAND TOOLS . ELECTRIC TOOLS . STEEL STRAPPING



SEE THOSE TWISTED CROSS-BARS?



FREE...
So that you can have a "close-up" of Blaw-Knox Grating construction, write today for this "paper-weight-size sample" on your business, letterhead.

They're electroforged directly into the bearing bars to form a rigid one-piece steel "material" of guaranteed strength—with safe footing at all times . . . Blaw-Knox Grating also —

- ★ Provides Maximum Open Area for light and ventilation
- ★ Is Easy to Maintain . . . easy to paint thoroughly
- ★ Is Self-Cleaning—no sharp angles to retain debris
- ★ Economical to Install in any size or shape

BLAW-KNOX DIVISION OF BLAW-KNOX COMPANY

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BLAW-KNOX GRATING

(Continued from page 276)

ance Co. of Canada, and J. G. Brigg; the P.A.A. of Toronto, Harvey T. Sprang, Frankel Bros. Ltd., and J. R. Speers, United Steel Corp., Ltd.; the P.A.A. of Hamilton District, J. F. Stephenson, Kraft Containers Ltd., and R. J. Allan, Wallace Barnes Co. Ltd.; the P.A.A. of Central Ontario, Roy A. Orr, Rheem Canada Ltd., Hamilton, and T. H. Ainlay, B. F. Goodrich Rubber Co. of Canada Ltd., Kitchener; the P.A.A. of Western Ontario, R. W. Northey, Fine Papers London Ltd., London, and R. P. Hunt, Somerville Ltd., Crumlin; the P.A.A. of Essex-Kent and District, E. J. Marnell, Canadian Top & Body Corp. Ltd., Tilbury, and H. A. Cole, Bendix-Eclipse of Canada Ltd., Windsor; the P.A.A. of Niagara District, G. D. Qua, Niagara Plumbing Supply Co. Ltd., Niagara Falls, and A. E. Farmer, Canadian Ohio Brass Co. Ltd., Niagara Falls; the P.A.A. of Winnipeg, J. B. Cheyne, Mac-Leod's Ltd., and H. C. Barker, Parkhill Bedding Ltd.; advisory publications committee, T. H. Ainlay.

FORT WORTH ASSN. HAS STAG AND BARBECUE

The annual stag party, barbecue and golf party of the Fort Worth Purchasing Agents Association was held at Meadow-brook Country Club on September 11. Many salesmen were present as guests of the association. As one pre-party announcement put it, "the affair is open to anyone provided he can give a fairly reasonable facsimile of an identification and provided he promises to leave his order book at home. Purchasing agents, in turn, have promised not to discuss delivery dates on those commodities."

Three new members have been added to the roster of the association during the summer: W. L. Nichols, Lennox Furnace Co.; W. L. Thornton, Steel Engineering Company, and R. S. Bishop, a transfer of membership formerly held by B. W. Dixon.

SWANTON GUEST SPEAKER AT ST. LOUIS ASSN. MEETING

The first fall meeting of the Purchasing Agents Association of St. Louis was held at the Sheraton Hotel on Tuesday, September 28. Robert C. Swanton, Director of Purchases of Winchester Repeating Arms Corp., Division of Olin Industries, Inc., New Haven, Conn., and chairman of the National Association of Purchasing Agents Business Survey Committee, was the guest speaker. Mr. Swanton's topic was, "A Purchasing Executive's Viewpoint of Business Trends and Price Movements".

The regular Educational Forum and the Commodity Discussion sessions were held prior to the main meeting.

SEE CLASSIFIED SECTION PAGE 344

HEAD SCREWS RECESSED

have Dimensional Uniformity assured by close **ENGINEERING** CONTROL

These elaborate precautions, this checking at every point and by every means makes sure you can depend on constant dimensional uniformity in Phillips Screws. They are engineered for PRACTICAL PRODUCTION . . . every screw and driver work together perfectly, in every size, every time. And this is just one of the five important reasons why only Phillips Cross Recessed Head Screws give you all the advantages of the cross recess design.

Get this new Fact-Full Booklet

that lets you in on the important facts you can't afford to overlook when you choose cross recessed head screws. It's FREE. Use the coupon.

GET ALL THE ADVANTAGES OF ASSEMBLY WITH CROSS RECESSED HEAD SCREWS . .

Wood Screws · Machine Screws · Self-tapping Screws · Stove Bolts

MENERONAL UNIFORMITY is unimportant in

contrast, Crass Received Head Seriess do a precision fit of the driver, and close series are essential to sesure the driving qual-

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aufacture of slotted acress because the constant of slotted screws became the screw not require a precision fit, and wide correct are permissible.



Phillips Screw Mfrs., 1800 Industrial Trust Bldg. Providence, R. I.

Address ...

Send me the new booklet - "How to Select Recessed Head Screws for Practical Production Driving".

it takes
SHOWMANSHIP
to make your
product stand out

Smart packaging is smart showmanship! Use Clearsite "squeezable" polyethylene and rigid polystyrene vials. All colors. Dependable uniformity for line production. All stock sizes. Special sizes and shapes to order. Straight, threaded, beaded necks. Polyethylene and all other closures. . . Write Celluplastic today for samples, literature, additional information.

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CLEARSITE RIGID POLYSTYRENE VIALS

polyethylene—all stock sizes

Sparkling, crystal-clear and gem-like colors. 70% lighter than glass. Shatterproof. Transparent, translucent and opaque. lasteless. Odorless. Unaffected by alkalis, alcohols ar weak acids. Permanent label imprinted during manufacture.





CLEARSITE "SQUEEZABLE" POLYETHYLENE VIALS 75% lighter than glass. Non-breakable, Translucent and opaque, Tasteless. Odorless. Unaffected by alkalis, acids or alcohols. Can be printed in 1, 2, 3, or 4 colors.

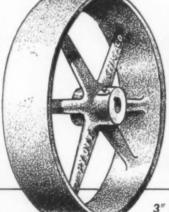
Celluplastic CORPORATION Established 1919

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PULLEYS

3" to 102" DIAMETERS

Pyott can meet your cast iron pulley requirements promptly. Available types include split and solid hub, single and multiple arm, wide and narrow face, flanged, tapered and step cone as well as tight and ball bearing loose pulleys. All are perfectly balanced and may be operated at running speeds up to 6000 FPM, depending on diameter and type of pulley. Pyott Cast Iron Pulleys are machine molded up to 72" diameter and 24" face width. Larger sizes or unusual designs floor molded, requiring no patterns from pulley user. With your inquiry, send a dimensional sketch and indicate your delivery requirements.

Catalog available on request

PYOTT FOUNDRY & MACHINE CO.

Established 1896 • 328 N. Sangamon St., Chicago 7, Illinois

IS THE ALUMINUM INDUSTRY BIG ENOUGH?

The aluminum industry is more than twice as big as most observers predicted when the war ended. But it is becoming more obvious every day that it is not big enough. Shipments are now more than two billion pounds a year but the industry's customers want much more than that. The impact of the European Recovery Program is still to be felt. And most important of all is the boom in the demand for aluminum which is coming because of the accelerated military program particularly the 70-group Air Force.

The rapidity with which the industry is approaching the wartime peak is all the more remarkable since very little of today's market is a carry-over from World War II. Practically all of the wartime shipments went into aircraft and other military uses. The aviation industry and the armed forces have thus far taken comparatively little aluminum since the end of the war. Consequently, the current record-breaking shipments are going into markets developed within the past two years or into uses which existed before the war. The average consumption before the war (1936-39) was 320,000,000 pounds. Today's shipments are more than seven times as large and 1947 shipments were six times as great as the pre-war average.

Physical Volume High

Pounds alone cannot measure a light metal industry's bigness. That is essentially true when comparing its size with that of other industries. The very fact that it requires fewer pounds of aluminum than of any other major metal to produce sheets or rods of a given dimension has contributed greatly to the industry's recent growth. For example, where aluminum sheet has been successful in taking away markets from other materials, it has replaced other materials-square foot for square foot-not pound for pound. Although for some purposes the aluminum sheet is thicker than the materials previously used, the physical volume of aluminum shipments-measured in cubic feet-gives a much more accurate comparison than does sheer weight. The same holds true for other forms of aluminum: rod, bar and castings. If this market reality is taken into account, aluminum shipments far exceed the equiva'ent volume of copper, lead or zinc. In fact the physical volume of aluminum shipments ranks second among the metals, being topped only by iron and steel.

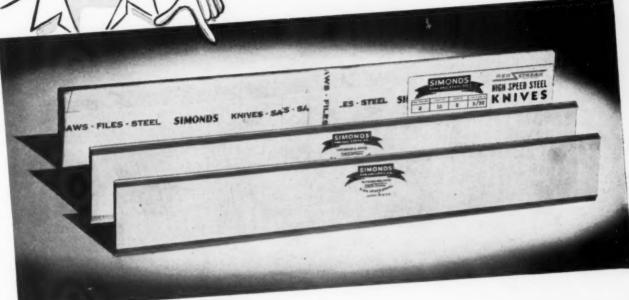
Particularly noteworthy is the extent to which aluminum has already surpassed copper in the volume of metal it has made available. A pound of copper yields only 30% as much sheet or rod of a particular dimension as does a pound of aluminum. The 1947 copper shipments, 2.8 billion pounds, were therefore equal in volume to 840 million pounds of aluminum. The 1947 aluminum shipments of two billion pounds were more than twice the equivalent volume of copper shipments.

The contrast in the case of other nonferrous metals, zinc and lead, is even sharper. Zinc shipments in 1947 amounted (Please turn to page 282)

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Yes, sir, "Red Back" KNIVES sure keep their tempers when the heat is on!



SIMONDS ALSO MAKES:



(Solid Tooth & Inserted Point)



Crosscut Saws (Croscent-Ground and General Purpose)



Narrow Band Saw



(Log Bands &

... plus a complete Line of Metal-Cutting Tools

Start with special steel from Simonds' own electric steel mills. Then temper and cool it by special methods which guarantee exact reproduction of knife-tempers from one order to the next.

Next, turn the blades over to Simonds expert knife men who keep a sharp eye on grinding to make sure dimensions are accurate and finish perfect. Then, whatever your job, you can be sure you have a knife that's tough enough to hold its cutting edge under any conditions you can impose on it.

Ask your dealer for the right type of Simonds "Red Back" Machine Knife for your work. Then watch output and quality go up... as your knife costs go down.

BRANCH OFFICES: 1350 Columbia Road, Boston 27, Mass.; 127 S. Green St., Chicago 7, Ill.; 416 W. Eighth St., Los Angeles 14, Calif.; 228 First St., San Francisco 5, Calif.; 311 S. W. First Ave., Portland 4, Ore.; 31 W. Trent Ave., Spokane 8, Washington. Canadian Factory: 595 St. Remi St., Montreal 30, Que.

SIMONDS

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Metal Name Plates, etched or lithographed * Plastic Name Plates, Dials and Panels, lithographed or screened * Etched Metal Scales, Clock Dials, Instrument Panels, Art Novelties, Advertising Specialties * Etched Metal Panels for elevators and architectural uses.

SUBSIDIARY OF DODGE MFG. CORPORATION, MISHAWAKA, INDIANA

(Continued from page 280)

to 1,656,000,000 pounds. Since zinc is 2.6 times as heavy as aluminum, this is equal in volume to 637,000,000 pounds of aluminum, or less than one-third of what the aluminum industry shipped. The 2.2 billion pounds of lead consumed in 1947. when put on a comparative volume basis, were equal to 524,000,000 pounds of aluminum (lead being 4.2 times as heavy). Shipments by the lead industry were therefore little more than a fourth as great, in volume, as the aluminum shipments. It takes the combined total of the copper, lead and zinc shipments in 1947 to equal, in volume, last year's aluminum shipments.

Growth a Two-Stage Process

The growth of the aluminum industry was a two-stage process. The war brought with it a vast expansion of the industry's capacity to produce and fabricate aluminum. Practically all of the added facilities were built primarily to provide aluminum for military aircraft. As the war came to an end, the production of such aircraft dropped off sharply, forcing much of the new aluminum capacity into idleness. Aluminum shipments dropped from 231 million pounds in March, 1945 to 58 million pounds in the month of October, 1945.

With the war demand suddenly gone, the aluminum industry found itself with the bulk of its enlarged capacity idle for lack of a market. An aggressive drive to develop new and bigger aluminum markets soon changed the picture. This selling campaign was the product of the industry's new pattern of competition and the low price of aluminum. The severe shortages and rising prices of other materials also helped to attract attention to aluminum which was more abundant and lower priced than ever before. Consequently, shipments more than trebled in the two years since October, 1945, rising from 58 million pounds at that time to 187 million pounds in October, 1947.

The bigness already attained by the aluminum industry has not yet been widely recognized because it has become something of a tradition in and around the industry to stress the *future* of this modern metal. There is good reason for this emphasis. Aluminum has so many possibilities that even today its future is much brighter than its present. While it is true that the industry has barely tapped its potential markets, it is well to recognize that aluminum has already become one of the major metals. Aluminum is a big industry today and is destined to grow very much bigger.

-Reynolds Metals Co.

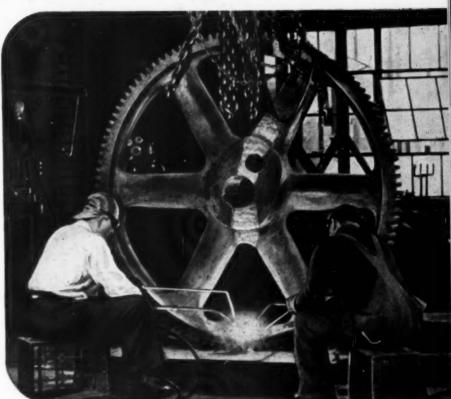
4 4 4 AUTOMOBILE UNDERCOATING

Various rubber, tar and asphalt byproducts and waste residues are being used as coatings for undercarriages and chassis of automobiles, including busses and trucks, as vibration dampeners, noise deadeners and protection of metal against corrosion and rust. These have also been applied at time of manufacture to various

(Please turn to page 286)

Check up on Bronze Welding now





When this 7-foot gear broke in half, a whole production unit depending on it stopped dead in its tracks. But in less time than it would take to complete foundry preparations for a new casting, the broken gear was bronze welded and ready for machining the two bores. Alignment of the teeth was excellent, and only a small amount of hand finishing was necessary. The Super Arc Welding Company of Detroit did the repair job, using 235 pounds of Anaconda Tobin Bronze Welding Rod.

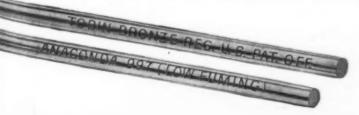
Even in the best-managed plants some equipment failures are bound to occur. Next time, instead of thinking in terms of patterns, foundries, machine shops and weeks of delay—think of economical Bronze Welding.

For years this low-cost, low-temperature method of oxy-acetylene repair welding has been used to salvage broken or fractured equipment... or to build up worn surfaces. Almost any part made of cast iron, steel, malleable iron or copper alloys can be Bronze Welded quickly and dependably,

usually at a small fraction of the cost of replacement parts.

There are dependable Bronze Welding repair shops in most industrial areas, so if your own shop isn't equipped, check with your directory—or the nearest District Office of The American Brass Company. In the meantime, write for Publication B-13, which gives detailed information on the Anaconda Welding Rods listed on the next page.

THE AMERICAN BRASS COMPANY
General Offices: Waterbury 88, Connecticut



ANACONDA Anaconda
BRONZE WELDING RODS

FOR REPAIR WELDING

FOR BUILDING UP WORN SURFACES

a baker's dozen of

ANACONDA WELDING RODS

The state of the s	APPROXIMATE COMPOSITION		MELTING	
NAME OF ROD	PER CENT	CENT.	DEGREES FAHR.	SUGGESTED WELDING METHOD AND USE
ANACONDA COPPER 372 Patent No. 2,220,464	98.85 Copper	1075	1967	Oxy-acetylene and inert-gas-shielded arc welding of copper.
DEOXIDIZED COPPER 939	99.9 Copper, deoxidizer present	1083	1981	Oxy-acetylene welding of copper.
SILVER BEARING COPPER 110	99 Copper, 1 Silver	1078	1972	Oxy-acetylene welding of copper.
SILICON COPPER 943	99.75 Copper, .25 Silicon	1083	1981	Oxy-acetylene welding of copper, copper to steel.
TOBIN BRONZE* 481	59 Copper, .50 Tin, remainder Zinc	885	1625	Oxy-acetylene welding of steel, cast iron, copper and its alloys, nickel and its alloys.
ECONOMY* BRONZE	Copper, Zinc, Tin	885	1625	Oxy-acetylene welding of steel and cast iron, etc.
ANACONDA 997 (Low Furning)	Copper, Zinc, Tin, Iron, Manganese, Silicon	870	1598	Oxy-acetylene welding of steel, cast iron, copper and its alloys, nickel and its alloys. Bearing surfaces.
MANGANESE BRONZE 984	Copper, Zinc, Tin, Iron, Manganese	870	1598	Oxy-acetylene welding of steel, cast iron, copper and its alloys, nickel and its alloys.
SUPER-NICKEL 826	70 Copper, 30 Nickel	1225	2237	Oxy-acetylene welding of Cupro-Nickel and steel
EVERDUR* 1010	96 Copper, 3 Silicon, 1 Manganese	1019	1866	Oxy-acetylene, carbon arc and inert-gas-shielded arc welding of Everdur, comper and copper alloys. Special applications to steel.
PHOSPHOR BRONZE 903	95.75 Copper, 4.00 Tin, .25 Phosphorus	1050	1922	Carbon arc welding of phosphor bronze and copper. Special applications to steel.
PHOSPHOR BRONZE 310	89.2 Copper, 10.5 Tin, .3 Phosphorus	1000	1832	Carbon arc welding of phosphor bronze, copper and copper alloys. Bearing surfaces on steel.
*Reg. U. S. Pat. Off.	W			

ANACONDA from mine to consumer

Announcing a "WHITE-BRONZE" Welding Rod

Anaconda Nickel Silver 828 is a 10% nickel welding rod for oxy-acetylene "white-bronze" welding of steel and cast iron. Information on welding procedure will be furnished on request.

THE AMERICAN BRASS COMPANY - General Offices: Waterbury 88, Connecticut
Subsidiary of Anaconda Copper Mining Company - In Canada: Anaconda American Brass Ltd., New Toronto, Ont.

0



LOSSES WASHED UP! Coin-slot washer-manufacturers can't afford to use slotted screws. For, as one maker says: "Slotted-driver gouges would cost us 50c to \$5.00 to refinish a painted panel." American Phillips Screws stop all that. And they start new savings - of several seconds per screw - that add up as high as 50%.

SALES STARCHED UP! Unburred American Phillips Screwheads mean that coin-laundry customers can't snag the clothes they put into machines. And these stay-tight screws mean, too, that washers are less often down for repair. Find out what double-edged production and sales-spurs American Phillips Screws can apply to your product. Write.

AMERICAN SCREW COMPANY, PROVIDENCE 1, RHODE ISLAND Chicago 11: 589 E. Illinois St. Detroit 2: 502 Stephenson Building



4-WINGED DRIVER CAN'T SLIP OUT OF PHILLIPS TAPERED RECESS

> **AMERICAN** PHILLIPS Screws ALL Bross Bess less Steel, Aluminum, Monel, Everdur (sili-

48115

GENERAL 6%



ELECTRIC

Water Coolers

... SAVE MANY A PENNY



YOU SAVE on operating costs when you install G-E Water Coolers. The reliable G-E Condensing Unit, engineered for high volumetric efficiency gives you more cooling per dollar of power cost. It is G-E designed to give years of reliable service. Cost-cutting, too, are the heavy gauge steel cabinet that stands up under factory vibration . . . the long-lasting stainless steel evaporator . . . and the non-clogging, counterflow, precooling system.



... ARE EASY TO KEEP SANITARY

THE CLEAN, sanitary, durable G-E top of white vitreous china won't discolor or scratch. It's non-splashing, too. A metallic bronze lacquer finish offers no hiding place for dust or dirt. The cabinet is treated after fabrication to retard rusting. See your General Electric dealer for full information. General Electric Company, Air Conditioning Dept., Section W82910. Bloomfield, N. I.



- 1. Easily adjusted temperature control. No tools, no serviceman needed.
- 2. Protection against corrosion. Stainless steel evaporator ... rust-resisting cabinet.
- 3. Vibration-resistant cabinet. Welded, heavy gauge steel cabinet stands up under factory
- 4. Economical, dependable operation. Long life, high volumetric efficiency from G-E Condensing Unit.
- 5. Simple, sanitary operation. Foot pedal control. Correct drinking height.

GENERAL



ELECTRIC

Water Coolers

(Continued from page 282)

other parts (sections and panels) to eliminate "tinny" noise, squeaks and rattling.

These materials are of a gummy and plastic consistency and are composed of rubber or asphalt with asbestos and other inert fillers. Preparations containing waste by-products and plastic residues are beginning to appear on the market; salvage and reconversion of surplus war assets (such as incendiary pastes and jellies, containing magnesium metallic dust, metallic oxides, metallic carbides, carbon, ground mica and sand) have been investigated, but their use appeared inadvisable.

There are three general types of undercoating, namely (1) asphalt-tar flammablesolvent type, (2) asphalt-tar water-emulsion type, and (3) rubber based flammable solvent type. The water emulsion type may be considered non-combustible.

The flammable solvent types vary. A number of products have been listed by Underwriters' Laboratories, Inc., as being in the alcohol or the kerosene type and the hazard of storage may be considered as mild. These materials find wide outlets in repair shops, service stations and especially in dealers' garages. Where these listed materials are used intermittently, that is, it is not a continuous operation, the only requirement would be to give due regard and attention to segregation especially from open flame and to provide ventilation. Grease pits should not be used, as all flammable solvents under these conditions may involve a severe life hazard. Wherever solvents are employed, which are more hazardous than the alcohol rating as given by Underwriters' Laboratories. Inc., is is recommended that application be made in spray booths in compliance with National Board of Fire Underwriters Pamphlet No. 33 (Standards for Paint Spraying and Spray Booths).

BOOKLET ON INDUSTRIAL PLANT SMOKE ABATEMENT

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Bituminous Coal Institute, public relations department of National Coal Association, announced recently that the industry's research agency is distributing a new booklet, "Overfire Jets in Action," on modern smoke abatement practice for commercial and industrial stationary plants, railroads and steamboats.

'Modern overfire jets strike at the heart of the smoke problem" and likewise "provide the turbulence and oxygen to burn the volatile matter from the coal before smoke can be formed," the foreword states. "This basic principle should be kept in mind for all smoke abatement programs.

Two important questions-"What causes smoke?" and "How can smoke be prevented?"-are answered simply and effectively by this booklet, copies of which are available from Bituminous Coal Research, Inc., 912 Oliver Bldg., Pittsburgh 22, Pa.

Representative existing installations of modern overfire jets-in which "overfire air may be supplied by motor-driven blow-ers or the air flow induced by steam jets" -are pictured and described throughout the two-colored booklet. "It is hoped that

(Please turn to page 288)



"CAREY-SPRAY" means better roof maintenance for you! With recently developed high pressure spraying equipment, Carey Roof Coatings and Cold Process Roof Cements are now applied to all types of roof jobs.

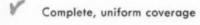
THAT'S "CAREY-SPRAY"

This faster way is a better, cleaner way. It gives you a uniform coating with a minimum of muss and fuss in a minimum of time. It gets the job done . . . instead of half finished . . . "while the sun shines." The spray method takes Carey Coatings from the original container direct to the roof. No fussing with broom and hoist—no lugging of

pails. A truck-mounted Alemite Versatal Spray unit merely drives to the job-site and goes to work. It's as simple as that!

Now you can "Carey-Spray" your roofs with such time-proved products as Careyclad Coating, Carey Fibercoating, Flextop, Enamelclad and Carex Coating. Now, too, you can have a Carey Cold Process Built-up Roof applied, without heat or brush, by Alemite Versatal Spray methods. To take advantage of Carey's more than 50 years experience in roofing and roof maintenance, call your nearest Carey Approved Roofer or write Dept. PU-10.

LOOK AT THESE "CAREY-SPRAY" features!



Quick, easy, clean application

Efficient—no hoists, no mess, no clutter. All spraying equipment is on one truck.

results...tight job, good seal, minimum cost

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Carey

Industrial Insulation • Rock Wool Insulation Careyduct • Asbestos Wallboard & Sheathing Asphalt Shingles & Roofings • Built-up Roofing Roof Coatings & Cements • Pipeline Felt Asphalt Tile Flooring • Waterproofing Materials Expansion Joint • Asbestos Shingles & Siding Corrugated Asbestos Roofing and Siding Miami-Carey Bathroom Cabinets & Accessories

UNIT BINS AND SHELVING AVAILABLE FOR IMMEDIATE DELIVERY -WE FURNISH THE STEEL!

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The outstanding Fort Steuben line of unit bins and shelving incorporates soundness in basic structural strength, correctness in design and fabrication, and durability of finish, with the special advantage of immediate delivery upon order. The line is fabricated from prime steel materials, which we furnish. Erection is as simple as that found in children's construction sets. For detailed information phone, write, or use the convenient coupon below.

Pictured above is a Fort Steuben 6-shelf Commercial Unit. Uprights are of 13 gauge angle stock in all standard heights, shelves are pressed from 18 gauge sheets and are available in all standard sizes. According to the Fort Steuben unit plan, uprights are drilled to permit placing of shelves at 1½" intervals over their entire height, and backs and sides may be used at will. At right, is shown a single or starting unit for closed type shelving.



Fort Steuben Auto Parts Bins (see left) are particularly designed for parts storage, not

only in the automotive industry, but in many other industries as well. The need for indexing is met through the use of full shelf-length label holders, standard on all Parts Bin Shelving. Lightning-fast adaptation of these bins to frequent changes, required in sectionizing storage requirements is effectively accomplished through the use of patented snap-in dividers, instantly adjustable on 1" centers over the entire shelf width. Shelf heights are adjustable on 1½" centers, and several combinations of sizes are available. Bins to meet all car manufacturers planographs or bin system requirements are available. Dealers and Manufacturer's Agents are invited to write.

Fort Steuben Metal Products Co.

Steubenville, Ohio · Phone: Steubenville 26204

Fort Steuben Metal Products Co. Steubenville, Ohio

Gentlemen: Please send me your complete catalog P.

Name	Title	
Company	Street	
City	Zone State	

(Continued from page 286)

these representative studies," the researchers state, "will serve to stimulate interest in the modern jet as a tool for smoke abatement."

The cases included in the booklet have been selected to "portray the versatility of jet application to the various types of furnaces (commercial or industrial, not residential) and firing methods existing throughout the country," according to officials of Bituminous Coal Research, Inc., a cooperative, non-profit agency which is directing a large-scale program to improve the utilization of bituminous coal.

Plants with fluctuating steam loads, oldtype river boilers, railroad locomotives, blower jets, semi-automatic control, stokerfired boilers and dutch-oven boilers are described in the "Overfire Jets in Action" bookies. Questions on manufacture, cost and efficiency are answered.

ANNOUNCE WINNERS OF SCREW MACHINE SCHOLARSHIPS

Announcement of the award to two Midwestern youths of \$1,500 scholarships for three years of study of screw machine engineering at the Rochester Institute of Technology has been announced by the Institute and the National Screw Machine Products Association.

The R.I.T. program in screw machine engineering was set up two years ago through the material cooperation of the N.S.M.P.A. Its continued development with the aid of the Association and member firms has made it the most complete center for such study now offering training in the field.

Winners of the scholarships, established by the Titan Metal Manufacturing Company, Bellefonte, Pa., and the D.A. Stuart Oil Company, Chicago, Ill., are Bruce Watkins, Osceola, Ind., and John M. Carney, Elyria, O.

RESINALL METALITE BELTS ANNOUNCED BY BEHR-MANNING

Resinall Metalite is the name of new member of the Behr-Manning Company's line of Metalite belts, namely the Durabonded Metalite belts and the Speed-Wet Metalite. It is characterized as "the answer to all dry grinding operations involving heat. As its name implies it is made with an all-resin adhesive. The new belt, it is stated, is not intended to display blue-bond Metalite in the finer grit numbers, or for grinding or finishing operations in which excessive heat does not occur; nor is it a wet grinding belt. On the other hand, for any operation in which the high heat of cut may prematurely break down glue-bond belts, it is stated that the new belt will deliver two to four times as much production. The thermosetting resins used in the construction of the new belt do not melt or flow with severe heat, while the glue-bonded abrasive belts capable of withstanding normal heats, may soften, gum and load at high temperatures. Printed matter with swatch of the Resinall Metalite belt, is available from the Behr-Manning Co.. Troy, N. Y.

A Pedigree is a Promise of Quality . . .

IN BOXES TOO!





THE PEMBROKE WELSH CORGI, as we know it today, traces its history back to 1107 when Flemish weavers brought it over to Wales to serve as a cattle dog. Hardy, alert and intelligent,

PROMISE OF Quality
PROMISE OF Service
PROMISE OF Fair Price

THE Union shield trade mark identifies boxes with a pedigree that goes back to the timber in Union's own forests.

Only fibre from fresh cut trees goes into Union boxes and completely integrated production, under one management in the world's largest Kraft pulp-to-container plant, is checked and rechecked every step of the way to maintain consistent high quality standards without variation.

members of this little breed make very rewarding household pets.

Five of the nine largest paper machines in the world and four modern box plants are your assurance of getting Union boxes when and where you need them.

And 75 years of leadership in paper packaging stands ready to help you in any problem of package engineering or design.

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NEW METHODS BRING "SPECIAL-MOTOR" SMOOTHNESS TO STANDARD MOTORS

Motors have been made in much the same way for many years, until Westinghouse—with many years of leadership in a-c motor developments—departed from "tradition" in electric motor concepts, and built the Life-Line.

Motor-making traditions have been broken by the basketful. Users were surveyed to find what they wanted in standard motors that they were not getting. Life-Line motors were designed and built from scratch—by new methods and new tools in a totally new plant—to include these features.

Quieter operation was one feature motor users asked for. It's important in many places—fans, blowers, air conditioning. Life-Line motors provide it. Life-Line ventilating design limits "windage" noise. New manufacturing techniques that insure absolute alignment and accuracy of fit, reduced vibration. The result is a standard motor with the quietness and freedom from vibration evidenced in the dramatic demonstration shown opposite. Modern tests check every motor for accuracy in manufacture.

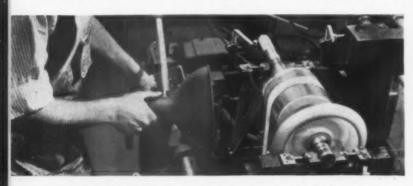
You will want full details on other Life-Line features—its solid steel construction—freedom from lubrication for 5 years or longer—new compactness and light weight. Life-Line motors, now built in sizes from 1-15 hp, are available in standard and near-standard types from stock. Other sizes and types—up to 200 hp—will soon be changed over to modern Life-Line design. Check your neares Westinghouse office for deliveries—or write Westinghouse Electric Corporation, P. O. Box 868. Pittsburgh 30, Pennsylvania.







MEASURED—WITH AIR New extreme accuracy for checking diameters of shafts and bearing bores is made possible by this precision gauge. Size is checked by any variations in air stream escaping between the part being checked and the master gauge.



EVERY UNIT BALANCED. Every Life-Line rotor — not random samples—is balanced on a Dynetric balancing machine* to insure maximum possible freedom from vibration of every unit.

*Reg. U. S. Pat. Off.



MOTOR "ASTHMA" CHECK. Sounds that shouldn't be then get by this "noise detective". Audiometer tells noise wave sound level meter (left) checks decibel rating; sound a (right) tells the relative amount of different frequencies re-

life-Line

rom tion

Line

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and and over

rite 868,

ther

SMOOTH? HERE'S PROOF! Coin balanced on edge on a Life-Line motor remains undisturbed as motor is started, runs and stops—dramatic evidence of Life-Line's freedom from vibration and resulting noise!

DAGE FENCE-Since

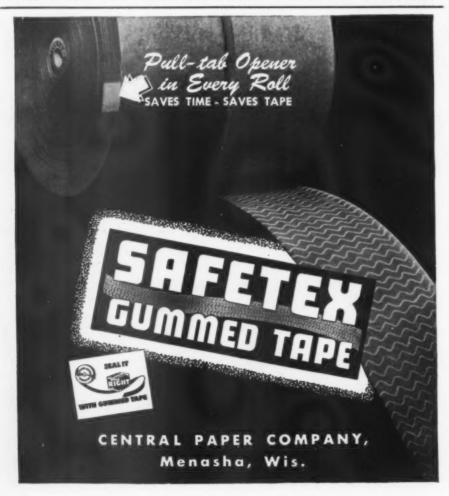
· AMERICA'S FIRST WIRE FENCE



Consult a Specialist when you buy fence

• Protection of persons and property against common hazards is the specialized business of the Page Fence Association member near you. His long experience and the expertness of his organization, plus the high quality, varied styles and choice of metals provided by PAGE, make him the man to consult when considering chain link fence for any property. He will help you to select the right fence to meet your need and will submit cost estimates without obligation. Write for illustrated information and we will send name of the member nearest you. For name of nearest member firm, write to PAGE FENCE ASSOCIATION in Monessen, Pa., Atlanta, Bridgeport, Chicago, Denver, Detreit, Los Angeles, Philadelphia, Pittsburgh, New York or San Francisco

PRODUCT OF PAGE STEEL & WIRE DIVISION OF AMERICAN CHAIN & CABLE - BRIDGEPORT, CONN.



Preferred Standards in Purchasing

(Continued from page 129)

bend individual ones slightly in order to bring them into alignment. With any other than a narrow range of steels and heat treatments the parts would either be too soft or else the case hardened areas would be so brittle that they would crack under the bending.

This method reduced the average assembly time per machine by more than eight hours, but posed the problem of a special type of salt bath heat treatment in one corner of the heat treating room.

Most of the time, that salt bath was idle. The heat treatment foreman, the product designer, and the purchasing engineer then began a concerted search to find other parts which, if made of the preferred steel, could be heat treated in that salt bath.

The search disclosed better types of steels, and better ingredients for the salt bath. Within six years the entire heat treating room had been reduced to four types of salt baths, plus a few quenching and drawing baths. The pack hardening and other bulkier equipment has been sold, all such work now being in such small quantities that it is more economical to have them handled by outside contractors. Only three types of steel are on the preferred lists for all parts which must be hardened, and only five types are needed for all purposes other than tools.

Not the least of the gain is in the fact that nearly all new product design is aimed at using these preferred steels and heat treatments. The designers are free to specify other materials. But for most purposes the preferred types are adequate.

Supplier's Preference

One purchase engineer is using a contractor's preferred material to facilitate product development and testing.

The contractor makes precision investment castings, and prefers to cast a beryllium copper alloy. This alloy will flow through almost any passage which can be provided for it, and therefore the problems of experimenting with gates and runners and other passages are few.

Working from simple sketches or from models, the contractor makes up small lots in accordance with the designs submitted by the purchasing engineer. These parts are tried out in experimental models, further improvements added, and slightly larger production runs made.

(Please turn to page 294)

ASK Can Higher Vacuum help you Lick a Competitive Situation?

If IT's food, you want true color, all the vitamins, and especially natural flavor! In chemical processing you want minimum temperatures, inert atmospheres, purity, and low cost. In mechanical operations you want to speed the work, reduce labor costs, and control the result.

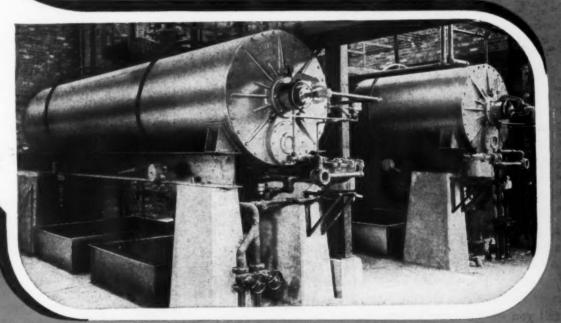
Higher vacuum is the answer to many such problems. Many manufacturers know this to be true but hesitate to tackle the job of mastering the new techniques.

Stokes has a documented record of helping manufacturers to capitalize on the new possibilities offered by Higher Vacuum.

The Stokes method is to put your problem in the hands of the very chemists and physicists who have charted the field of Higher Vacuum... who have invented and developed the equipment which has made Higher Vacuum a working tool of industry. First they master the theory of your problem. Then they take it through the Stokes semi-plant-scale laboratory. When they bring it out, after production test-runs, you know (1) if the problem can be solved by Higher Vacuum (2) if it can be done at a profit (3) what the cost to manufacture will be, and (4) how to run the machinery and equipment which the job will require.

If you're giving any thought to Higher Vacuum, let Stokes help. F. J. Stokes Machine Company, 5902 Tabor Road, Philadelphia 20, Penna.

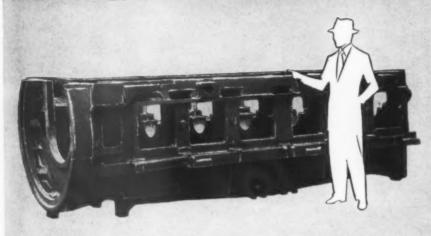
Stokes makes Chemical and Food Processing Equipment, High Vacuum Pumps and Gages, Vacuum and Atmospheric Dryers, Pharmaceutical Equipment, Tablet Machines, Water Stills, and many Special Processing Machines.



STOKES KNOWS

Brake Shoe Research serves you today, and anticipates tamorrow."

CAST PARTS



BRAKE SHOE ...

• If you need heavy cast parts made by the most modern methods to insure quality and efficiency, consider the 10,000 lb. diesel engine base shown above. For this casting Brake Shoe selected a type of Meehanite® providing ample strength and having the dampening capacity so necessary in such a casting to prevent the building up of excessive strains.

You can count on impartial, experienced recommendations from Brake Shoe metallurgists and foundry technical personnel. Whether ABK Metal, Gray Iron or Meehanite® is suggested, you can be sure the best for your purpose will be selected. Castings can be made in widely-used types (light, medium or heavy weight, green or dry sand or all core assemblies) including intricate or special types. Outline your cast parts requirements; let us tell you how we can fill them.



BRAKE SHOE AND CASTINGS DIVISION 230 PARK AVENUE, NEW YORK 17, N. Y.

6713

Preferred Standards in Purchasing

(Continued from page 292)

While making his small runs in beryllium copper, the contractor casts a few pieces in steel or other alloys just to see what the costs and problems will be. He may have to run four gates to the steel piece where one sufficed for the beryllium copper. But at least he prepares to quote.

Unless the laboratory tests have shown that the beryllium copper alloy is clearly inadequate for the service, the first field tests are run with parts made from it. This gives the double advantage of making easy design changes when the field tests prove them desirable, and of using an alloy which is high enough in strength and in wear resistance to give an excellent idea of how steel would perform in the same service.

As the field tests progress, the cooperation between the purchase engineer and the contractor remains close. Ultimately, and usually within two years, it is known whether the design is to be abandoned, or the use of beryllium copper is to be continued, or changeover to steel is to be made.

Exact figures on the average time needed to develop a new design are hard to obtain. But it is the design engineer's estimate that by thorough purchase engineering plus adopting the contractor's preferred material as the basis of intricate parts experiments an average of at least 25% is cut from the time ordinarily needed for launching a new product.

Wide Possibilities

A company which experiences unexpected and unpredictable calls for extra copies of its letters has adopted a list of preferred second sheet papers which, if used with good clear carbon papers, will blue print very well. A maker of special machinery has listed its preferred lengths and diameters of bolts, sizes of motors, numbers of anti-friction bearings, types of stainless steels, and other preferred lists covering more than two hundred different items, with the result that design changes are made with minimum effect upon inventories.

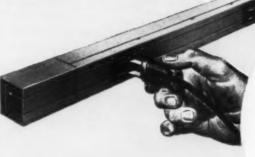
Preferred purchasing requires high persistence of purchase engineering plus equally persistent cooperation with all executive personnel of the company and with the representatives of vendors. It is a way of cooperating with international standardization movements and of creating standards within (or selected from) those standards. But preferred purchasing

(Please turn to page 298)

NATIONAL ELECTRIC Plug-in Strip

a <u>NEW</u>
Revolutionary
Multi-Outlet Assembly
that gives you
a S-P-R-E-A-D
of outlets







- Ideal for assembly benches ... Laboratories ... Offices ... Factory kitchens ... Lobbies ... Accounting departments ... Drafting rooms ... Electrical testing departments.
- Solid copper electrical system from panel box to last outlet.
- Easy to install and connect ... No soldered or screwed electrical connections ... Mounted flush or on the surface ... A cut-on-the-job product ... Short lengths cut to fit, similar to conduit.
- Far more convenient than arbitrarily located duplex outlets. Provides outlets every 6" or 18".
- MAIL the coupon today for complete information on this revolutionary wiring assembly.



National Electric

PITTSBURGH 30, PA.

- Tamper-proof . . . Capping is permanently locked on. There's no reason to ever open up Plug-In Strip.
- Life-time, fool-proof receptacles . . . Plug prongs receive full length wipe and contact.

 Listed by Underwriters' Laboratories, Inc.

National Electric Products Corporation
13 10 Chamber of Commerce Building
Pittsburgh 19, pa.

() Please send me your catalog on the NE PLUG-IN STRIP.

() Also installation information.

NAME

ADDRESS

Today it's a Good Idea to Investigate Every Promise of Production Cost Savings

Allison experts devote full time to a single important production operation . . . ABRASIVE CUTTING. The Allison plant is streamlined to produce . . . economically . . . a single major product . . . ABRASIVE CUTTING WHEELS. It will cost you nothing . . . and may pay you well to



HOLO-KROME Completely Cold Forged SOCKET SET SCREWS

"BUILT-IN" FEATURES ASSURE PERFECT PERFORMANCE EVERY TIME!

- METHOD The exclusive Holo-Krome patented process of completely cold forging.
- 2. SOCKETS Perfectly shaped, no taper, clean and
- 3. POINTS Concentric with body, maximum gripping and holding power.
- 4. THREADS Accurate in form, uniformly clean, and guaranteed Class 3 Thread Fit.
- STEEL H-K special analysis heat-treated alloy.
- 6. INSPECTION Each H-K Socket Screw is individually inspected before leaving the factory.

RESULT — GUARANTEED UNFAILING PERFORMANCE.

H-K Distributors are always ready to serve you from their warehouse stock.



DO YOU KNOW?

By Using BEMIS TITE-FIT TUBING

YOU

REDUCE labor and material costs, because you:

ELIMINATE handling heavy bales of burlap.

ELIMINATE time required to open bales and remove bale coverings.

ELIMINATE time required to cut burlap into sheets. **ELIMINATE** using more burlap than necessary.

ELIMINATE all hand sewing.

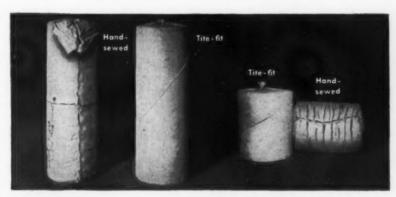
IMPROVE the appearance of your rolls.

YOUR CUSTOMERS RECEIVE neat

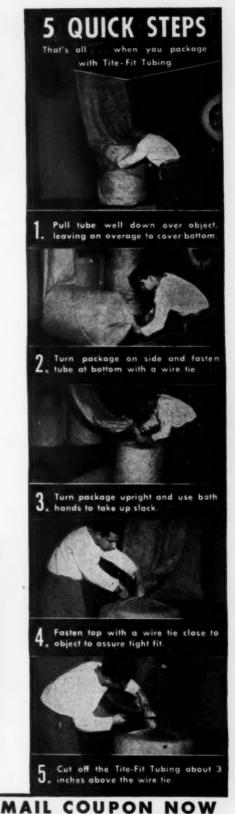
packages that are easy to handle, because there's a handy ear on each end.

SAVE TIME as TITE-FIT TUBING is easily and quickly removed. Just untwist wire tie at one end and slip tubing off.

ELIMINATE chance of cutting into contents and damaging goods, as no cutting of sewing thread or goods is necessary.



This versatile tubing fits almost any shape and a wide range of package sizes. One roll may cover many different diameters and lengths neatly, without waste because TITE-FIT TUBING has stretch in both directions.





Bemis Bro. Bag Co. 5132 Second Ave., Brooklyn, N. Y. Send descriptive folder on TITE-FIT TUBING Send sample. Our packages are approximately inches in circumference. (Please specify) Name Firm

Zone___State_





CULLMAN Stock SPROCKETS

will do the job-Better!

With many types to select from — you are almost certain to find just the size you need for practically every transmission requirement — ready for immediate delivery. Cullman Sprockets—produced by fast, low-cost, high-precision methods—assure top operating efficiency. "Specials," toc, are quickly available—made up by exclusive Cullman methods and specialized equipment.



Write today for tree catalog containing useful data and helpful facts for sprocket users. It lists dimensions.

CULLMAN WHEEL COMPANY
1352 P Altgeld Street Chicago 14, Illinois

Preferred Standards in Purchasing

(Continued from page 294)

also cuts completely across standardization lines, and establishes standards peculiar to the company using it, even though the preferred items may be so completely special as to be severe purchasing problems.

This method may be applied to a smaller segment of a business, or to a few special problems, or to the business as a whole. Usually it already exists, but in an unrecognized unorganized form. Once organized and followed with persistence, it is likely to be highly economical.

Coordinated Inventory Control

(Continued from page 134)

bearings for replacement purposes can only be estimated on the basis of historical records of past sales and anticipated future sales. Even with the aid of a well polished crystal ball. we often fall short of our needs and at other times we find ourselves overstocked. The rate of consumption of replacement bearings is far from consistent within any local territory. The buyer for resale finds himself most generally directly in the middle, with an enthusiastic and optimistic sales force on one hand demanding lots of everything in the stock bins; on the other hand sits management, wishing to increase sales and at the same time insisting that the buyer hold inventory levels at a point consistent with sound business practice and a satisfactory rate of stock turnover. The buyer for resale, no matter how careful and shrewd, is often far from correct in his estimates, which may be too little and too late, or too much and on the shelves too long. For these reasons it is evident that those responsible for the purchasing function of a distributor organization need a sympathetic Inventory Control Assistance Plan.

In conclusion, a few words in regard to one of the distributors' current chief problems is not out of order. Through this prolonged period of rising costs, our charges for doing business continually increase, and they have reached staggering proportions. We are confined between two firm barriers marking the channel through which we move; on the one side we have firm costs of merchandise and on the other side we have suggested resale prices. We control neither our cost nor our selling price. While we travel through this channel, everything for satisfactory service

(Please turn to page 300)



We believe this the greatest performer in the history of machine blades

It's easy to make broad claims, hard to back them up. Yet we of Millers Falls would like to prove this statement:

The new "Jet-Edge" blade will reduce sawing costs 20% to 50% even under toughest cutting conditions.

We believe we can show you, on your own work, the most astounding performance you have ever seen. We believe that "Jet-Edge" is the greatest performer in the history of machine blades. If you will contact us here in Greenfield, we'll arrange for a demonstration.

THE MILLERS FALLS LINE OF METAL CUTTING SAWS — Standard Steel Hand Blades — "Tuf-Flex" Special Alloy Hand Blades — "Blu-Flex" High Speed Hand — "Blu-Mol" High Speed Hand and Power — "Double Life" High Speed Double Edge Power — Tungsten High Speed Hand and Power — "Jet-Edge" High Speed Welded Edge Power — Metal Cutting Band Saws — Wood Cutting Band Saws — High Speed Hole Saws.

MILLERS FALLS COMPANY

Greenfield • Massachusetts



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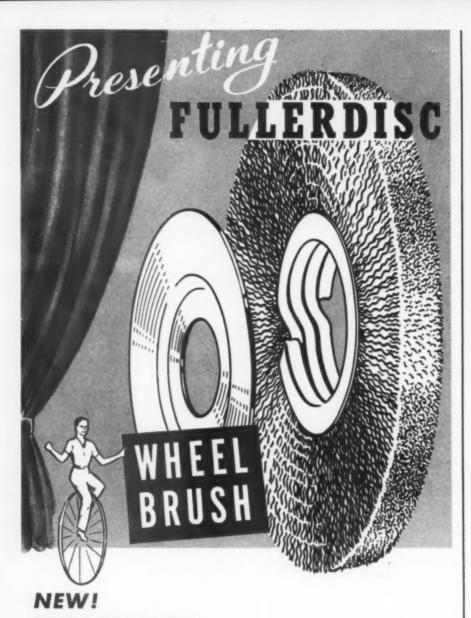
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Fullerdisc cuts costs because you replace only the brush unit. No expense for adapters. They're built right into the heavy gauge, cadmium plated side-plates . . . and you buy side plates only once. Easy to install . . . fits all shaft diameters from ½" to 1".

ECONOMICAL!

Fullerdisc single sections are wider — a full inch wide — resulting in longer brush life and a lower cost for multiple section brushes.

Available in diameters from 5" to 9" and in a choice of materials to provide for the varied requirements of scratching, deburring, polishing, buffing, and coloring. For complete details and specifications send for new folder "Fullerdisc Wheel Brush". Write to . . .

THE FULLER BRUSH CO.

INDUSTRIAL DIV. . 3554 MAIN ST. . HARTFORD 2, CONN.

Coordinated Inventory Control

(Continued from page 298)

to our customers increases in cost to us—wages, supplies, transportation

charges, etc.

It is true that as the price level of bearings has moved up, an increase in our dollar volume has resulted. but not to an extent sufficient to nearly meet the increased cost of staying in business. The only solution to our problem is that of a more intensified sales program and at the same time eternal vigilance toward improving the efficiency of our internal operations. The manufacturer can help us in a partial reduction of our cost of doing business by permitting returns, within certain limitations, without the penalty of a handling charge. Your favorable consideration of an Inventory Control Assistance Plan along these lines will be a long and decisive step in that direction.

Greater Flexibility For Military Procurement

(Continued from page 133)

authority, the Air Force takes a more literal approach. The contracting officer is responsible for the contract—and follows through not only on the pricing of the delivered item, but also on the prices which the prime contractor pays to his suppliers.

This takes into account the generalized thesis that 60¢ of every procurement dollar is re-expended by the purchasing agent with whom the

initial contract is placed.

A new feature in Navy procurement is the establishment of a system of Supply-Demand Control Points.

The broad outline of Navy purchasing is for the various Bureaus of the Navy—such as the Bureaus of Ships, Aeronautics, etc.—to purchase the specialized equipment which they

require.

For standard items, the Supply-Demand Control Points have been set up in various sections of the country as a clearing house, with complete inventory records to assure that adequate supplies are in inventory, and to guard against accumulation of excessive inventory.

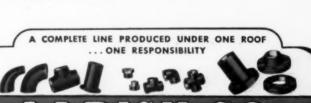
Then there are the various field offices which fan out over the country, and which are used by both the Bureaus and the Control Points to make such purchases as can best be

made on local markets.

In a discussion of military procurement, it is important to note that (Please turn to page 302)



Another example of engineering leadership...all Ladish Seamless Welding Tees—3/4" through 20"—provide the greater safety and ease of installation resulting from full-length-branch outlets. This advanced design affords extra protection by keeping high welding heats safely away from vital crotch areas. The proven strength advantages of Ladish tapered construction are present in the branch as well as the run.



CUDAHY, WISCONSIN

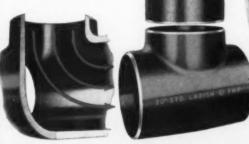
DISTRICT OFFICES: New York • Buffalo • Pittsburgh • Philadelphia Cleveland • Chicago • St. Louis • Atlanta • Houston • Los Angeles

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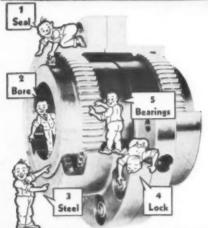
Scientific metal distribution — achieved through taper design — assures maximum strength in every cross section and equalizes stress over the entire fitting.



Long, sweeping crotch radius reduces pressure loss and minimizes resistance to flow. Full length branch provides accessibility for







WALDRON Geat Series "A" Type COUPLING

- Positive, practically imperishable Walflex Seal—impervious to ail and grease.
- 2. Designed to take same size shaft as bulky couplings of larger diameter.
- Forged steel parts permit operation at high or low speeds.
- 4. Elastic Stop Nuts lock two-piece cover sleeve that functions as a single rigid unit.
- 5. Bearings are pressure lubricated.

This newly designed all-steel coupling compensates for misalignment without adding stress to shaft or bearings. Insures a neater, more compact job with greater accuracy.

Write for full details and rating tables on following types: Standard, Heavy Duty, Mill Motor, Marine, Floating Shaft, Jordan, Shear Pin, Oil Collector, Cut Out.

COUPLING DIVISION

JOHN WALDRON

CORPORATION NEW BRUNSWICK, N. J.

Greater Flexibility For Military Procurement

(Continued from page 300)

progress is being made in making service procurement policies and procedures uniform throughout the three services.

A combined "Armed Services Procurement Regulation" is in the process of compilation. Considerable friction still exists between the services at various levels, but there is a greater degree of cooperation at the purchasing levels—tracing back logically to the fact that there was more cooperation in service procurement before the so-called unification than in other service functions.

Who Owns Plant Equipment?

(Continued from page 144)

of other machinery and equipment permanently attached to the premises.

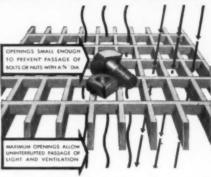
Hence, it is certain that although purchased equipment is clearly "chattels", yet they cannot be removed from real property if such chattels are necessary to efficient operation of "legal fixtures" which, according to law, cannot be removed from the premises.

Of course, purchasers, sellers, and property owners may avoid legal complications by having contracts or agreements expressing their rights and obligations. Thus, although a building may be damaged by removal of heavy equipment, either a seller or purchaser may remove it from the building, providing it was originally agreed or intended between the landlord and purchaser that such equipment could be removed, and the original landlord presently owns the building.

For instance, in a leading case, Ballard v. Company, 93 Washington 655, it was shown that equipment was installed in a building by a tenant without any intention of the landlord making it a permanent accession to the building. In holding the tenant entitled to remove the equipment from the building, the higher court said:

"In determining whether a chattel which has been annexed to the free-hold is a trade fixture or a part of the realty, the cardinal inquiry is into the intent of the party making the annexation. It is conclusive, of course, that the chattel annexed is a fixture when it cannot be removed without a material injury to the free-hold, as for example, where it is essential to the support of some part of a permanent structure."

TRI-LOK RECTANGULAR OPEN STEEL FLOORING



Tri-Lok strength is obtained by truss action through twisted cross-bar, curved in opposite directions at each bearing-bar. Standard openings in Tri-Lok Rectangular Steel Flooring are 1" x 3 1/8"—other size openings can be supplied as required.

Diagonal, or Super-Safety U-type Flooring, and stair treads of all types, are available. Bulletin KH1140 describes the construction features of Tri-Lok Open Steel Flooring.

DRAVO CORPORATION

National Distributor for the Tri-Lok Company

Dravo Bldg., Pittsburgh 22, Pa.

Sales Representatives in Principal Cities





REASONS

FOR USING HARPER EVERLASTING FASTENINGS

- I. Resistance to Rust and Corrosion
- 2. Resistance to High Temperatures
- 3. Non-Magnetic
- 4. Non-Sparking
- 5. Re-Usable

- 6. Attractive Appearance
- 7. Easy to Clean
- 8. High Strength
- 9. Long Life
- 10. Lower Ultimate Cost

11. Resistance to Fatigue

... Only one reason for using common steel-(LOWER FIRST COST)



An amazing combination of advantages in favor of non-ferrous and stainless steel bolt and nut products.

PROMPT SHIPMENT FROM STOCK

Bolts, Nuts, Screws, Washers, Rivets, Accessories . . Harper maintains stocks of over 5,000 individual items in Chicago and New York . . . large quantities of each. Others being added constantly. Specials made to order from ample stocks of raw materials. Write for catalog.

THE H. M. HARPER COMPANY

Morton Grove, Illinois (Suburb of Chicago)



PERSONALITIES in the NEWS

Douglos Campbell Smyth, Director, Treasurer and Purchasing Agent of The Henry G. Thompson & Son Company, New Haven, Conn. was honored with a testimonial dinner on September 8, in cele-



Douglas Campbell Smyth

bration of his fiftieth anniversary with the company. He was presented with an engraved tray in commemoration of the occasion. Among those present were William E. Cross, president of Clemson Bros., Inc., D. W. Northup, president of the company, Fellowes Thompson, Graham Thompson, and Wade Marks, directors, and other officers, and 50 associates in the Thompson Company.

Troy Himmelmon, vice-president, has taken over purchasing for Western Hotels, Inc., Seattle, Wash., succeeding J. H. Lynch, who resigned.

N. C. Droper, formerly with the purchasing department of Shell Oil at Tulsa, Okla., has been made regional assistant in the Purchasing-Stores Department in the Houston, Tex. office. He joined the Shell organization in 1928.

P. Peter Shorin has been appointed Purchasing Agent of Topps Chewing Gum, Inc., Brooklyn, N. Y., succeeding Sidney M. Greenfield. Mr. Shorin had been assistant production manager for three years. Prior to coming with the company he attended the University of Illinois and served with the U. S. Cavalry during the war.

R. Bruce Reid has joined Brown Corporation, Berlin, N. H. as executive assistant to the General Purchasing Agent. He was formerly Purchasing Agent for Canadian Copper Refiners Ltd., Montreal, Can.

T. A. Urban has taken over the duties of Purchasing Agent for National Refining Company as part of a move of certain functions of the company, including purchasing, from Cleveland, O. to the offices of the parent organization, Mid-West Refineries, Inc., Grand Rapids, Mich. Mr. Urban, who has been and continues to be Purchasing Agent for Mid-West Refineries, Inc., succeeds Elmer J. Bolt, who resigned.

Anthony Siragusa has been appointed Assistant to Vice President—Purchases, United States Steel Corporation of Delaware, Pittsburgh, Pa., according to an announcement by C. A. Ilgenfritz, Vice President. Mr. Siragusa formerly was Supervising Buyer—Purchasing Division of United



Anthony Siragusa

States Steel Corporation of Delaware, with offices at 71 Broadway, New York, N. Y.

Mr. Siragusa will make his headquarters in Pittsburgh, and will continue to be in charge of the purchasing matters which he formerly handled in New York. The New York purchasing office was consolidated with the United States Steel Corporation of Delaware purchasing department at 436 Seventh Avenue, Pittsburgh, on September 1.

Mr. Siragusa was recently appointed a consultant to the Bureau of Federal Supply, United States Treasury Department.

Moj. Gen. Joseph A. Teece, former Purchasing Agent for Fansteel Metallurgical Corporation, North Chicago, Ill., who resumed his duties as assistant to the president following his return from several years of distinguished army service, has been elected vice-president of the corporation. He will be in charge of procurement, production, and internal plant activities.

Donald O. Gruffs has been named to the newly created position of Purchasing Agent at the Glenn L. Martin Company, Bakelite Division, Painesville, O. He was formerly with the W. M. Pattison Supply Company.

Walter Dykema has been promoted to the post of Manager of Contract Purchases for the Continental Can Company, New York, N. Y. He was assistant manager of Continental's manufacturing division in Seattle, Wash., prior to his present appointment, and previous to that West Coast Purchasing Agent for the company, with headquarters in San Francisco. Previously he had been Purchasing Agent in the Seattle plant for a number of years.

s. W. Bennett has succeeded R. L. Stoner as Purchasing Agent for Arden Farms, Seattle, Wash.

James K. Adams has succeeded A. G. Schille as Purchasing Agent for Ketner Bros., Inc., Tacoma, Wash.

Fred G. Rumboll has succeeded L. C. Disser as West Coast Purchasing Representative of the Ford Motor Company, with headquarters at Los Angeles, Calif. Mr. Disser retired October 1.

Mr. Rumball will be responsible for developing West Coast sources of supply for automobile parts needed for assembly operations at Ford plants in Richmond and Long Beach, Calif., and Dallas, Tex.,



Fred G. Rumball

and the Lincoln-Mercury assembly plant at Los Angeles. Current annual rate of Ford's purchases from West Coast suppliers is estimated to exceed thirty million dollars.

(Please turn to page 306)



SHUTDOWNS DRASTICALLY REDUCED

Sun Lubricant Virtually Eliminates Crippling Shutdowns in Railroad Shop

A railroad maintenance shop was being hamstrung every 3 or 4 weeks by the shutdown of a compressor supplying air to hammers, grinders, and other equipment. Hard carbon formed on the compressor valves. In 2 years, 150 valves had to be replaced.

A Sun Engineer was asked to study the problem. He recommended a Sun Oil that has been "Job Proved" in hundreds of compressors. In the next $2\frac{1}{2}$ years, with the Sun oil in the crankcase, only 5 valves required replacement. The saving in parts alone was \$2,500, and the greatly improved performance of the compressor permitted almost continuous operation of shop machinery.

This is typical of the increased efficiency and the savings made possible in many kinds of industrial plants where Sun petroleum products are used. For example, by switching to Sun Tableway Lubricant a manufacturer eliminated "gumming" and saved \$1,000 a month on a single grinding operation. In one industrial plant a Sun quenching oil saved \$7,000 in one year. Tested after six years' use in the hydraulic system of a 500-ton press, a Sun oil was found to be still in good condition.

For information about Sun "Job Proved" products for your industry, call the nearest Sun Office.

SUN OIL COMPANY, Philadelphia 3, Pa. In Canada: Sun Oil Company, Ltd., Toronto and Montreal

SUN PETROLEUM PRODUCTS

"JOB PROVED" IN EVERY INDUSTRY



Jomes Wilson, Jr., who has been Superintendent of the Purchasing Division of The Mutual Life Insurance Company of New York, New York City, for the past five and a half years, has been promoted to be assistant secretary of the company.



James Wilson, Jr.

Mr. Wilson will continue to supervise all purchases in addition to the other duties of his new position.

Mr. Wilson joined The Mutual Life in 1927 as an office boy. In 1935 he was named secretary to the Purchasing Agent and four years later he was appointed Assistant Purchasing Agent. In 1943 he was advanced to Superintendent of the Purchasing Division.

John 8. Lynch has been appointed City Purchasing Agent of New Brunswick, N. J., succeeding the late John K. Daly.

E. A. Bromley, who has been General Purchasing Agent since 1941, has been appointed Vice President in Charge of Purchases and Stores of the Canadian National Railway, Montreal, Can.

Ashley D. Show has been appointed Purchasing Agent of Santa Monica, Calif.

J. Raymond Boyle, Purchasing Agent of the Prudential Insurance Company, Newark, N. J., was honored recently with a testimonial dinner marking his 40th anniversary with the company.

J. Warren Kinney, Purchasing Agent of the American Laundry Machinery Co., Norwood, O., was recently honored with a membership in the "Half Century Service Club" of the company in recognition of his 50 years service.

John H. Holton, Vice President and Director of Procurement of the Carrier Corporation, Syracuse, N. Y. was a member of the panel discussing "Economic Effects of the Basing Point Decision", at one of the round table conferences held in conjunction with the first 1948-49 board meeting of the National Industrial Conference Board in New York city on September 23.

John J. Wyle has been named Plant Purchasing Agent of Goodyear Tire & Rubber Co.'s factory at Topeka, Kans., according to an announcement by E. H. Brooks, Director of Purchases. He succeeds C. W. Gilchrist, who had held the post since the company's Topkea plant started operations in 1945. Mr. Gilchrist

has become district manager for the Toledo Scale Co. in Nashville, Tenn.

Mr. Wyle was Purchasing Agent for Biggs Boiler Works in Akron, O. for seven years prior to joining Goodyear in 1933. During the war he was a member of Goodyear Aircraft Corp.'s purchasing staff and early in 1947 became Purchasing Agent at the company's Wingfoot Homes plant in Washington Park, Ill., returning to Akron recently as a senior buyer.

J. S. Gobriel, Assistant Purchasing Agent of the Rio Grande Railroad since 1937, has been promoted to Purchasing Agent, according to an announcement by E. A. West, executive vice-president. He succeeds W. B. Hall, who has retired after 57 years of service with the railroad.

Mr. Gabriel has been with the Rio Grande since 1910, when he entered service as a laborer in the store department at Salida, Colo. Successive advancements followed until he came to Denver in 1937 as assistant to Mr. Hall.



W. B. Hall

A. J. Anderson will assume Mr. Gabriel's former duties, and his in turn will be taken over by C. E. Kelsey. Both will retain their present titles of Assistant Purchasing Agent.

In announcing the retirement of Mr. Hall who had been Purchasing Agent since 1925, President Wilson McCarthy stated that in his opinion no man ever connected with the railroad had made a greater contribution to the success of the property.

J. W. Corgill has been named Purchasing Agent of Jefferson Davis Hospital, Houston, Tex., succeeding Harry Payne.

W. H. McLourin, business manager of Louisiana Polytechnic Institute, Ruston, La., has taken over the duties of Purchasing Agent, succeeding Arthur C. Thigpen who has resigned to become instructor in electrical engineering at the institute.

M. W. Droke has been appointed City Purchasing Agent of Colorado Springs, Colo., following council approval of the installation of a central purchasing system for the city.

Colonel L. O. Grice, Commanding Officer, New York Quartermaster Purchasing Office, 111 East 16th Street, New York, N. Y., has been promoted to the grade of Brigadier General. General Grice has held his present assignment since 1946. The office is one of the largest procurement installations in the country, with a staff of over 900 civilian personnel and 6% officers.

T. P. Harris, Purchasing Agent for the western region of the Canadian National Railway, has been promoted to General Purchasing Agent of the system, with headquarters at Montreal, Que., Can. He is succeeded at Winnipeg, Man. by C. R. Snell. T. M. Pye, Purchasing Agent at Halifax, N. S., has been appointed Assistant to Vice President of Purchases and Stores at Montreal, succeeding Mr. Snell. W. M. Holmes, ass'stant to General Purchasing Agent at Montreal, succeeds Mr. Pye at Halifax, and S. M. Smith, secretary to chairman and president, returns to the purchasing department as successor to Mr. Holmes at Montreal.

Bernice Wood, former member of the Women's Division of the Purchasing Agents Association of Washington, Seattle, Wash., and formerly procurement officer for UNRRA, has returned to Shanghai as a member of the Medical Supply Division, Economic Cooperative Administration. Since leaving home three years ago she has been around the world two and one-half times, all by air, visiting practically every country in the Middle East and Far East, among these being Arabia, Iraq, Africa, India, Egypt, China, Burma, and Siam, as well as Sicily and England. Miss Wood has learned to talk Mandarin, Cantonese, and some Shanghai dialect.

CURRAN RIDOUT

Curron Ridout, acting Purchasing Agent of the International Standard Electric Company, New York, N. Y. died recently following an operation. Mr. Ridout had been an active member of the New York Purchasing Agents Association, and previously with the Washington, D. C. Association, of which he was a founder and former secretary-treasurer.

AMONG THE COMPANIES YOU BUY FROM

New York, N. Y.—S. Wolf & Company Ltd. (London W 5, England). Fred L. Stuart has been named exclusive United States representative for the company, manufacturer of portable electric tools. This is the first time these well-known tools have been made available to the



Fred L. Stuart

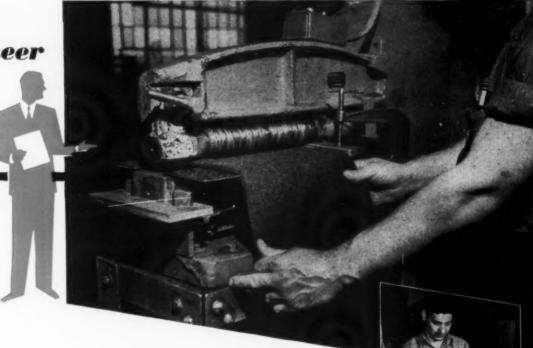
American market. Mr. Stuart, formerly factory representative and technician for P. & F. Corbin division, American Hardware Corp., will have headquarters at Room 1111, 33 W. 42nd Street.

(Please turn to page 308)

A case
history
from the
note book
of a
Disstoneer

How a Disstoneer helped boost production 50%

Feeding felt into machine equipped with a 14-blade gang of Disston Circular Knives



He may be able to do as much for you

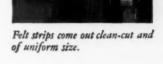
Helping to increase production and cut costs is an important part of the service offered by Disstoneers. Daily, these cutting tool specialists are invited by manufacturers like you to study operations and to show how and where improvements can be made. Here is a typical instance:

The American Felt Company, Detroit, was cutting ¼" to 1" wide and ¼" thick strips of felt from rolls 400 to 500 feet long. The method used was slow, for it permitted the cutting of but one strip at a time. Widths were inaccurate. Knife sharpening was frequent and down time very costly.

A Disstoneer showed how several strips could be cut in a single operation. The recommendation was adopted. Now the company is cutting up to 25 strips at a time, and has several gangs set up to cut various widths. Disston Knives stood up far longer; sharpening was reduced to but once in 7 days; down time was cut almost to zero; the felt strips are clean-cut and accurate . . . and production has been increased approximately 50% with a considerable reduction in knife costs.

A Disstoneer will be glad to make a study of your cutting operations and submit his recommendations . . . without charge or obligation.

Write for full particulars, or get in touch with your local Disston Distributor.







HENRY DISSTON & SONS, INC., 1033 Tacony, Philadelphia 35, Pa., U.S.A.

More Power to Industry Through LUNKENHEIMER VALVES

LUNKENHEIMER VALVES

... SELECTED FOR NEW SHERWIN-WILLIAMS POWER PLANT

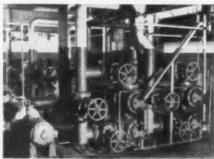
ENGINEERS AND ARCHITECTS: SCHMIDT, GARDEN, AND ERICKSON, CHICAGO

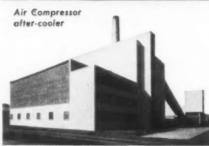


Feedwater treatment transfer pumps

The new power house at Sherwin-Williams' Chicago plant is the last word in efficiency. From the three, 3-drum, bent-tube boilers to the make-up water treatment system, every item of the installation was selected for trouble-free, economical operation. It's only natural therefore, that the list of principal equipment specifies Lunkenheimer Valves.

And so it is in modern plants...in a wide cross-section of industry... across the country, LUNKENHEIMER VALVES are selected for low-cost operation and dependability. From industrial consultants to operating men, experience with these quality valves proves there is no better valve available.





Whether you're planning a new plant, expansion of present facilities or modernization . . . you can specify Lunkenheimer Valves with utmost confidence. Available through Distributors in all industrial centers.

ESTABLISHED 1862

THE LUNKENHEIMER CO.

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LUNKENHEIMER VALVES

BRONZE, IRON, STEEL, AND CORROSION RESISTANT ALLOY VALVES
AIR DEVICES, LUBRICATORS, AIRCRAFT FITTINGS

Midland, Mich.—The Dow Chemical Company. The Industrial Chemicals D'vision has been divided into three sales divisions. The solvents division is under the superision of Lou's P. Butenschoen; heavy chemicals division under James W. Harris; and alkalies division under Kenneth M. Wildes

Atlanta, Ga.—The Babcock & Wilcox Company. Robert J. Powell has been named refractory sales engineer for Alabama, Tennessee and western Georg'a and Florida. He will make his headquarters at 1604 Candler Building, here.

Salem, Mass.—Sylvania Electric Products, Inc. Edward J. Lynch has been appointed manager of warehouse service.

Boston, Moss.—Federal Telephone and Radio Corporation. Justin J. Callahan has joined the company as sales representative covering the New England terr'tory. He will make his headquarters at the company's offices, 43 Leon Street.

Hortford, Conn.—The Billings & Spencer Company. George W. Schwager has been appointed sales manager to succeed W.



George W. Schwager

Dorsey Endres, resigned. Mr. Schwager was formerly field sales manager for the Holo-Krome Screw Corp.

Norwalk, Conn.—The E. H. Hotchkiss Company. William C. Dickneider has been appointed vice-president and director of sales and marketing for the company. He was formerly with the Old Town Ribbon & Carbon Co.

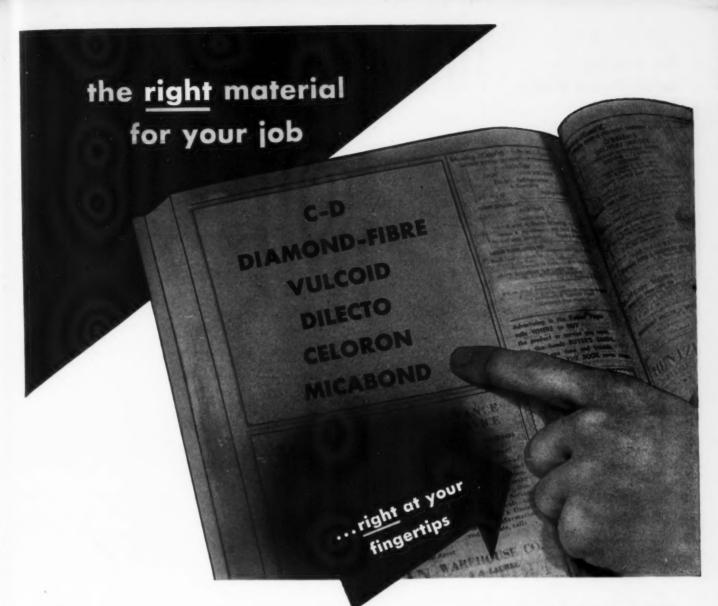
Hortford, Conn.—Air Reduction Sales Company. Adelson-Wirts, Inc., 1800 Park Street, has been appointed an authorized dealer in Airco products.

Chicago, III.—Skilsaw, Inc. Walter W. Kemphert has been elected vice-president in charge of sales. He joined the company after 20 years with Worthington Pump & Machinery Corp.

Company. David A. Utiger has been named sales manager of the saw division.

Indianapolis, Ind.—The Bristol Company. H. B. Sears has been appointed mill supply products salesman for the Indianapolis area. He will operate from the company's Chicago branch office, 351-363 E. Ohio St., Chicago.

(Please turn to page 310)



If you want to get the electrical insulating material best suited to improve product performance, here's an engineering service worth investigating. Experienced Continental-Diamond engineers will welcome the opportunity of working with you from the start of a job to its completion. Backing them up is a complete line of insulating plastics with unusual combinations of electrical, chemical and mechanical properties. There's Diamond Fibre for toughness, wear resistance, and light weight, Vulcoid for superb arc resistance, toughness, good dielectric strength and fair moisture stability, Dilecto for structural





strength and dimensional stability. All in all, there are five different C-D Plastics subdivided into grades to fit your specific application.

Take advantage of this complete plastics service designed to help you improve product performance, lower unit costs. For personal engineering help or prompt delivery of insulating plastics, call your nearest C-D office today.

C-D HIGH-STRENGTH PLASTICS

Diamond Fibre-Vulcanized Fibre Vulcoid—Resin Impregnated Fibre

Dilecto-Laminated Thermosetting Plastic Celoron-Molded High-Strength Plastic

Micabond-Bonded Mica Splittings

BRANCH OFFICES: NEW YORK 17 • CLEVELAND 14 • CHICAGO 11 • SPARTANBURG, S. C. SALES OFFICES IN PRINCIPAL CITIES WEST COAST REPRESENTATIVE: MARWOOD LTD., SAN FRANCISCO 3 . IN CANADA: DIAMOND STATE FIBRE CO., OF CANADA, LTD., TORONTO 8

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Give your key men the up-to-the-minute facts on . . . RESISTANCE WELDING

New fact program helps cut costs in your plant

Up-to-date knowledge of modern resistance welding is a *must* for your key men. Get this money saving information to them *now!*

IT'S EASY-General Electric has prepared all the facts in an easy-totake, visual manner that's ideal for getting new ideas across fast.

Here's what the resistance welding program offers:

1. A fact-packed manual detailing the methods, practices, and equipment of modern resistance welding. It spells out objectively—without sales bias—the many ways in which this versatile industrial tool cuts costs and increases speed.

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We want you to judge for yourself whether the resistance welding program will pay off in your plant. That's why we offer business executives this chance to examine the Resistance Welding Manual without cost.

Showings cost you nothing. With your manual, we'll tell you how to arrange for a FREE film showing.



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Please send me a sample copy of the G-E Resistance Welding Manual without cost or obligation, with details on how I can arrange for a FREE SHOWING of the film. (Extra copies at regular manual price—\$1.00.)

Name____Title__

Company

Street

City

GENERAL 🛞 ELECTRIC

Ookland, Calif.—Reynolds Metals Company. The American Brass and Copper Sales Company, 1920 Union Street has been named distributor for special aluminum mill products manufactured by Reynolds.

Cleveland, O.—American Steel & Wire Co. A new and separate sales division has been created to handle the electrical wire and cable products of the company, with T. F. Peterson as manager of sales, and C. H. Eisenhardt as assistant. Four new district sales offices under the new organization will be established in Boston, Cleveland, Chicago and New York.

New York, N. Y.—Mathieson Chemical Corporation. Frank W. Thomas, Jr., has been named Assistant General Manager of Sales.

Atlanta, Ga.—Fafnir Bearing Company. A new warehouse and office has been established at 245 Piedmont Avenue. A. G. Laughridge is branch manager.

Cincinnati, O.—General Box Company. Charles C. Bush has been appointed manager of the Cincinnati Division of the



Charles C. Bush

company to succeed the late E. C. Marshall. He formerly represented the company in Chicago and Milwaukee.

Cleveland, O.—Diamond Alkali Company. J. C. McKenna has been named product manager of alkali sales. Charles E. Grant succeeds him as product manager of chromium chemical sales.

Horrisburg, Po.—Berger Manufacturing Division, Republic Steel Corporation. Robert N. Legg, Jr., has been appointed salesman in this area.

Decotor, III.—A. E. Staley Manufacturing Company. Melvin J. Longbons has been promoted to manager of the oil sales division.

Springfield, Moss—Monsanto Chemical Company, Plastics Division. The Industrial and Surface Coating Resins sales department has been divided into two groups. E. Everett Decker will head the Adhesives and Industrial Resins department, and Albert W. Dunning will continue as sales manager of the Surface Coatings Resins department.

Philadalphia, Pa.—The Phosphor Bronze Corporation. Ralph M. Bixler has been appointed sales manager—mill products for the company.

McKeesport, Po.—Firth Sterling Steel & Carbide Corporation. Gilbert B. Richards has been named general sales manager.

Mishawaka, Ind.—American Wheelabrator & Equipment Corp. Sherrill S. Deputy has been appointed sales manager.

St. Louis, Mo.—Hyster Company. Shipping Utilities has been named truck distributor to handle sales, parts and service in 36 counties of Missouri and 50 counties of Illinois. The company replaces Wharton L. Peters, Inc.

New York, N. Y.—Shell Chemical Company. Administrative offices, recently transferred from San Francisco, have been opened at 4 West 58 Street.

INDUSTRIAL DEVELOPMENTS

The B. F. Goodrich Company will construct a multi-million dollar plant for the manufacture of industrial rubber belting in Akron, O. The new plant will contain 150,000 square feet of floor space.

Bemis Poper Bog Company's recently completed plant at Vancouver, Wash. has reached full production and is now completely serving the territory prevously served by the Bemis plant at St. Helens, Ore.

Thermoid Compony's plant at Nephi, Utah is now approaching 75% operation. Industrial belts, hose of all kinds, molded products for the oil fields, and fan belts and radiator hose for the automotive trade will be manufactured in the new unit.

F. J. Stokes Mochine Co., Philadelphia. Pa. has completed a greatly enlarged and improved shop for the manufacture of punches and dies for industrial and pharmaceutical tablet machines.

Joseph T. Ryerson & Son, Inc., distributor of steel from stock, recently opened their new plant in Emeryv'lle, Calif. About 3,000 persons visited the plant, the thirteenth unit in the company's nation-wide group of steel-service center.

Lindberg Steel Treating Company will open a new custom heat treating plant in St. Louis, Mo. on or about November 1.

Unit Monufacturing Co., Columbus, O., recently incorporated for manufacturing and selling brake service equipment and materials handling equipment, has acquired the facilities of the Bigelow Manufacturing Co.

Frontier Industries, Buffalo, N. Y. has purchased the Fairmount Tool and Forging Company of Cleveland, O., which will be operated as a subsidiary.

Pettibone Mulliken Corporation, Chicago, Ill. has purchased the assets and business of Universal Engineering Corporation of Cedar Rapids, Iowa.

(Please turn to page 312)

Whether you hand or power drive screws
you'll drive 'em better

with Uniform TRD Screws



The faster the pace, the more important uniformity is to you. Quality can't be sacrificed to stepped-up production — so smart production men depend on Corbin Screws because they know their assemblers get a good one every time.

CORBIN SLOTTED SCREWS

Quality and quantity production is almost automatic when you drive uniform Corbin Screws. Grab some — place 'em — drive . . . easier, faster, better . . . no matter how you drive. Corbin Screws are available in all sizes and styles to meet your needs, for wood, metal, or plastic. Insist on Corbin.

CORBIN SCREW

DIVISION

THE AMERICAN HARDWARE CORPORATION, NEW BRITAIN, CONN.

Warehouses: New Britain, New York, Chicago



FOR SAFETY PLUS



For better rubberized Work Gloves, look for the HOOD Trade Mark — a sign of quality since 1896. Styles to suit every requirement. Send for folder. Order from your jobber.

HOOD RUBBER CO., WATERTOWN, MASS.
A Division of the B. F. Goodrich Company

NOW the same well-known sturdy EAGLE bench oiler with the Copperite Finish

Eagle quality steel spring bottom bench oilers have been favorites in shops and mills for many years. Now, their new durable Copperite finish makes them even more acceptable—particularly for Manufacturers who supply an Oiler as equipment with their product. Available in ½ to 1 pint capacities. All sizes have reinforced insert type spouts—3" and 5" straight spouts or 9" bent spouts.

Order from your Distributor

"Oil with an EAGLE Oiler"

EAGLE MANUFACTURING CO.
Dept. P1048 Wellsburg, West Virginia

Fonsteel Metallurgical Corporation, North Chicago, Ill. has acquired the entire common stock equity in Vascoloy-Ramet Corporation held by Vanadium-Alloys Steel Company.

Allis-Chalmers has completed a new plant at the company's Pittsburgh, Pa. Works, boosting Pittsburgh transformer manufacturing capacity 40%.

Swift & Company will begin operations this fall in a new industrial oil processing plant at Hammond, Ind., that will add new sources of glycerides and fatty acids to its industrial oil production.

City Auto Stamping Company, Toledo, O. has completed a \$1,600,000 expansion program begun a year ago. The new plant extension contains four electrically operated super-giant presses ranging from 900-ton to 1200-ton individual pressure capacity.

Norton Company, Worcester, Mass. recently dedicated a new \$4,300,000 manufacturing plant in a private ceremony,



New Norton building above

Over 602 feet long and 320 feet wide, containing approximately 5 acres of manufacturing space on one floor, the building is the largest in the world for the manufacture of grinding wheels.

The Allmon Steel Company, Pittsburgh, Pa., has been incorporated and organized as a sales company, dealing principally in steel for special purposes.

The Amplex Division of the Chrysler Corporation has completed a major expansion program of manufacturing facilities in Detroit, Mich.

Howard Industries, Inc., Chicago, Ill. has purchased the Cyclohm Motor Corporation, Long Island City, N. Y. and is offering a complete line of fractional horse-power motors, combining both companies lines.

Mothieson Chemical Corporation has concluded an agreement with the War Assets Administration for the purchase of the ammonia plant and ammonia oxidation facilities at Lake Charles, La. Purchase price was \$7,063,300.

Shell Chemical Corporation has announced that its multi-million dollar plant for the manufacture of methyl ethyl ketone and secondary butyl alcohol is now on stream at Houston, Tex.

Electric Auto-Lite Compony, Toledo, O. has signed a contract for the purchase from the War Assets Administration of the former Wright Arronautical Plant at Lockland, O.

(Please turn to page 314)



Coolers & Fountains



...as pretty as a picture

THE SET-UP BOX is first choice among designers of fine packages. It offers unlimited selection of papers, colors, screens, and graphic methods - - - all tools of the trade to frame your product in its prettiest picture - - - and protect it - - - and sell it.

See your nearest set-up box manufacturer. His designers will help you improve your product package.

Screens - Ben Day, Chemtone Process 65-300, etc.

Papers - Smooth, Dull, Glossy, Colors, Textured, etc.

Graphic - Letter press, Offset, Silk Screen, Gravure, etc.

FOR INFORMATION OR SERVICE . CONSULT YOUR NEAREST SET-UP BOX MANUFACTURER

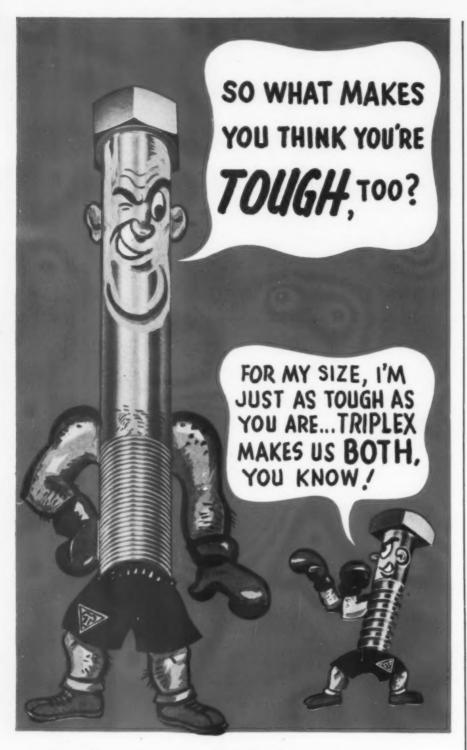
PAPER BOX MANUFACTURERS



ND COOPERATING SUPPLIERS

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Liberty Trust Building, Philadelphia, Penn.



The little guy is right—he's just as tough, in his own class, as the big fellow. For TRIPLEX makes its entire line of fasteners tough! Small sizes have a job to perform, too, and it's mighty important that they have maximum holding power, with accurate, free-running threads. If you don't have our complete catalog—write for it TODAY! TRIPLEX SCREW COMPANY, 5331 Grant Avenue, Cleveland 5, Ohio.



Devoe & Raynolds, Company, Inc., New York, N. Y., has acquired the Bishop-Conklin Paint Company of Los Angeles, Cal'f. Plans have been made to enlarge present production facilities, and construct a new synthetic resin plant.

The B. F. Goodrich Company will add rubber lining of storage tanks, tank cars, pipe lines and other equipment to its production activities at the Tuscaloosa, Ala. plant. Construction of a new building to house the operation will begin at once.

Republic Steel Corporation has announced that production at the company's new Enduro Plant No. 2 in Massillon, Ohio is



Republic's Massillon, O. plant

now under way. The new facilities substantially increase Republic's capacity for production of stainless steel sheets.

Brooks & Perkins, Inc., designers and fabricators of sheet magnesium, Detroit, have announced plant expansion of more than 100%. Manufacturing space adjoining the plant at 2457 Lafayette has been taken over and remodelling is nearing completion.

The Firestone Tire and Rubber Company has announced a million dollar expansion program that will more than double the output of foamed latex at the Fall River, Mass. plant of the company.

PORTABLE SOUND SYSTEM

A new "deluxe" portable sound system which employes a 15-watt amplifier and high-efficiency components to provide acoustical output equivalent to that of a 30-watt portable sound system incorporating two average permanent-magnet speakers, is announced by the RCA Engineering Products Department, Camden, N. J.

The system, which weighs but 45 pounds complete, is designated as RCA TYPE SP-15A. It consists of aerodynamic microphone, a low-distortion, high-output amplifier, a heavy-duty alnico permanent magnet-type loudspeaker, and a two-tone luggage size carrying case 8" x 17" x 21". It is designed for use in moderate size auditoriums, conference rooms, terminals, and so on.

Two loudspeakers can be attached to the amplifier to give the same high output for large auditoriums or locations requiring greater coverage than can be provided by one loudspeaker. To place the system in operation it is only necessary to connect the power cable to any 100-watt, 50 to 60-cycle power supply, and plug the microphone and speaker cables into the amplifier. A phonograph jack permits the playing of transcriptions for musical programs or to furnish background.

(Please turn to page 316)



• While the quality of the steel used is only one of many factors in producing exceptional steel forgings, it should be the first factor to consider in selecting your forging maker.

If your forging has a tough job to do, if it must stand up and give dependable performance over a long service life, if it must be capable of withstanding shock loads with high impact resistance, the character of the steel should be your primary consideration.

National Forge makes its own forging steel by the basic electric process—the

process admitted to be superior for quality steel making. With the resultant finer grain structure and freedom from impurities, segregations and porosity, you can count on forgings with inherently greater strength.

Why not let us give you the technical reasons for specifying electric steel in your forgings . . . and also explain how the forgesmithing, heat treating and high precision finish machining are handled at National Forge. You'll buy better forgings if you let us place these facts in your hands.



National Forge

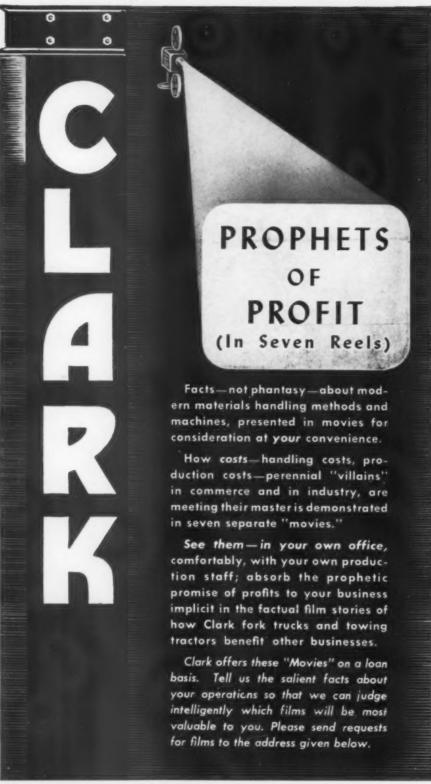
Irvine, Warren County, Pennsylvania

STEEL MAKERS & FORGESMITHS

MEAT TREATERS * MACHINISTS

OCTOBER, 1948

315





INDUSTRIAL TRUCK DIV., CLARK EQUIPMENT COMPANY BATTLE CREEK 14, MICH. REPRESENTATIVES IN PRINCIPAL CITIES THROUGHOUT THE WORLD "THE NATIONAL GUARD DEFENDS AMERICA-JOIN NOW"

TWO-TONE PLATING IN MASS PRODUCTION

The Continental Die Casting Corpora tion, a division of the F. L. Jacobs Co. Detroit, Mich., has developed a method of achieving two-tone plating on mass production items. The product on which the method was first used is an automobile hood ornament in the form of a single piece of die cast metal having both gold and chrome plating. The ornament, consisting of a cigar-shaped center piece flanked by two wing pieces, is about 20 inches long, and weighs approximately 3¾ pounds. About one fourth of the top surface is gold plated, while the remainder is chrome plated. The success of the process lay in finding a suitable masking material to cover the area to be gold plated while the rest of the ornament was being chrome plated.

1 1 1 WIRE ROPE STANDARDS

The Work of the Bureau of Standards in collaboration with industry engineers in planning and presenting simplified practice has received wide approval and acceptance, says Macwhyte Rope Ol'ogy. As a result of this work extending over a long period, wire rope users will continue to have standard specifications for wire rope breaking strengths.

"One of the characteristics of wire rope which is probably not very well known." says Wm. C. Russell, engineer, "is that with a change in the size of rope, the breaking strength does not vary in proportion to the metallic cross-sectional area, as it would in the case of other materials such as a bar of steel.

"With two bars of round mild steel, one having twice the cross sectional area of the other, the strength of the larger one would be twice that of the smaller one. Similarly, if we take a 1" diameter bar and compare it with a 2" diameter bar of the same material, the strength of the larger bar would be four times that of the smaller one because the cross-sectional area of the larger one is four times that

of the smaller one.

"The cross sectional area of wire rope varies with the square of diameter, the same as the round bar, but because of the fact that smaller wires are used in the smaller rope, the strength of these smaller wires per square inch of area is greater than that of larger ones.

"This is a characteristic of the wire drawing process, that the finer the wires in any given grade, the greater the tensile strength in pounds per square inch.

'There are a number of other factors that enter into the tensile strength of wire rope, such as various strand constructions, efficiency, or loss due to fabricating a large number of wires into a single unit, and they trying to get each of them to carry an equal proportion of a load, which may be imposed upon it.

"All of these factors resulted in breaking strength values that did not follow in exact pattern, and as new types of rope and new grades were introduced, breaking

(Please turn to page 318)





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- In thicknesses from .001".
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- Annealed, unannealed or hardened and tempered.
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\$5-32





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Lubricants definitely reduce friction and wear to a minimum. They lower power costs and prolong the life of equipment to an infinitely greater degree. LUBRI-PLATE arrests progressive wear.

LUBRIPLATE

Lubricants protect machine parts against the destructive action of rust and corrosion. This feature alone puts LUBRIPLATE far out in front of conventional lubricants.

LUBRIPLATE

Lubricants are extremely economical for reason that they possess very long life and "stayput" properties. A little LUBRI-PLATE goes a long way.



(Continued from page 316)

strength value grew up like 'Topsy' and were in many cases inconsistent and not truly representative of certain sizes of rope.

"As a result of this, wire rope engineers of various American manufacturers held many meetings prior to World War II in which this problem was worked on until finally they came up with a plan for establishing the breaking strength for all sizes and grades of rope. In this plan the strength for each size is consistently related to every other size, and while the formula for calculating breaking strength is somewhat complicated, the curve established by plotting these breaking strengths is a smooth one.

"The work of the industry engineers was presented to the Simplified Practice Division of the Bureau of Standards, who recognized the value and significance of the job and the result was Simplified Practice recommendation R198-43.

"This recommendation was made effective February 15, 1943, and is today the standard for breaking strength values for wire rope made in America."

Y 1 1 NEW MILL MOTOR ANNOUNCED BY CROCKER-WHEELER



The Crocker-Wheeler Electric Manufacturing Co., Ampere, N. J., announces the addition of the AISE Standard 600 Series mill motor to its line of d-c steel mill motors. The new motor is adaptable for use totally enclosed non-ventilated or separately ventilated, and can be furnished suitable for self-ventilation. Bearing caps are readily removable to facilitate bearing inspection. The solid cylindrical roller bearings are completely supported against thrust and radial loads. Shaft stress is low because the bearings are close to the load. Improved commutation is provided by split brushes and four interpoles.

PLASTIC LATEX FOR FOODSTUFFS PACKAGING

A new water-borne plastic which should prove particularly useful in the decorative coating and film fields is announced by B. F. Goodrich Chemical Company, Rose Building, Cleveland, Ohio.

This material, called Geon polyblend latex, is a colloidal blend of Geon polyvinyl chloride and Hycar nitrile rubber. It is supplied as a liquid containing 45-50% solids, with a specific gravity of 1.08. The mechanical stability of the latex is good.

(Please turn to page 320)

Sawyer's PROTECTIVE WEAR stays Pliable!



100% waterproof Neoprene* has been added to Sawyer's famous LIGHTHOUSE Brand of protective wear. Roomier and lighterweight, Neoprene garments are soft, pliable . . . and they stay pliable no matter what the weather! Resist most acids. They're built to give comfortable stormy weather protection through many years of hard wear. Complete range of sizes—black or yellow.

*Reg. T. M. of E. I. duPont deNemours & Co

ANOTHER NEW FAVORITE!

Another recent addition is Sawyer's Hycar** Aprons! Already LIGHTHOUSE Brand favorites, these aprons are light and tough—resist most acids, have no cumbersome reinforcement. Two lightweight styles (ideal for women!) have waist tie tapes only; the heavier apron, four grommets. Tapes go under hem to give greater strength.

** American Rubber Hycar is a product of B. F. Goodrich Chemical Company

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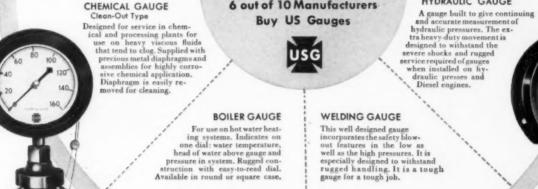


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MICHIGAN 3078

*You're correct if you identified this easily machinable Gray Iron Casting as a Control Housing.

(Continued from page 318)

Geon polyblend latex dries at room temperature to a tough, water-white film with excellent greaseproofing qualities. The film has a tear resistance of 1000 pounds per inch, a tensile strength of 2000 psi and an elongation of 350 per cent. A ten minute fusion at 300°F will raise the tensile strength to 3500-4000 psi and the elongation to 600-700 per cent, but will lower the tear strength by about 20 per cent. The film will heat seal at 280°F. Its low temperature flexibil ty is good; it is still flexible at -50°F. It is tasteless and non-toxic.

A 2 mil film has a moisture vapor transmission of 6-8 grams per 100 sq. inch in 24 hours. While too great for cheese, the MVT is ideal for oleomargarine and meats where exceptionally low MVT's are objectionable since they prevent normal "breathing." This MVT, combined with the good low temperature properties, also should make the latex film excellent for packaging frozen foods.

A dielectric strength of about 800 volts/mil open up the possibilities for the mate-

rial in electrical applications.

The gloss of the coating produced is high and this is maintained even if the latex is highly loaded. The heat stability is good and the greaseproofness is not impaired even though the coated material is flexed at very low temperatures.

COAL AS GAS TURBINE FUEL IN 2 EXPERIMENTAL TRIALS

The two gas turbine power units of the U. S. Bureau of Mines will be used in two experimental programs which are fraught with significance to the advancing technology of coal, the Bituminous Coal Institute, Washington, D.C., reported recently.

The larger gas turbine of 40,000 cubic-feet-per-minute compression capacity will be applied to the full-scale testing of the laboratory prototype of the gas turbine railroad locomotive burnings powder-fine bituminous coal. This developmental program is sponsored by the Locomotive Development Committee of Bituminous Coal Research, Inc., which is supported by nine railroads and four bituminous producers. In due course two experimental coal-burnings gas turbine locomotives will be built.

The other gas turbine of 23,000 cubicfeet-per-minute compression capacity will be applied by the U. S. Bureau of Mines to the renewed experimentation next winter at Gorgas, Alabama, of gasifying bituminous coal in its underground seam, without mining it. The Alabama Power Company is collaborating with the U.S. Bureau of Mines by furnishing engineering and operating services, at cost, and contributing as the site for the experiment some 300 acres of coal seam averaging 40 inches thick. This will be a more ambitious experiment than was the initial one in early 1947 in the underground gasification of coal.

By engineering controlled combustion of the coal in its underground seam, where Nature placed it, there results a gaseous mixture of mainly carbon monoxide and (Please turn to page 322)



with today's installation costs* only the

Longest-Lived

will be economical

* The lifetime cost of a cable rather than its first cost is the only true measure. Okonite wires and cables, built to stand up better and longer, can offset high installation costs. When Okonite insulated wires and cables are vulcanized, every foot that enters the huge pressure chamber receives uniform treatment. One reason is this:— on the reel or drum as it goes into the vulcanizer, the complete length of cable is compressed within a continuous metal mold. And this metal mold insures equal transfer of the heat throughout every portion of the insulation.

When the pure tin mold is peeled off after removing the cable from the chamber, the entire length has been simultaneously vulcanized at the same temperature and pressure. The benefits that result include longer life, greater density and higher electrical values.

Bulletin PG-101 describes and shows this operation and others—all based on Okonite's years of experience in making the longest-lived cable money can buy. Write to The Okonite Company, Passaic, N. J.

6511





Arabol Lagging Adhesive — designed specifically to hold non-conducting material around pipes, ducts, boilers — is now on the market. This adhesive is easy to apply; eliminates the time-consuming task of sewing. It dries in 4 to 6 hours, leaving a sized finish. Use it on canvas, asbestos, fiberglas or cork. Its finish need not be painted at all, unless you prefer one coat for appearance. Maintenance is simplified — grease, oil, soot and dirt wash off easily. In addition, this lagging adhesive is vermin-proof . . . fire-retardant, too.

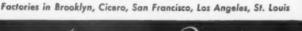
You can depend on Arabol for a thorough job of adhesion. Rigorous tests by independent laboratories proved its adhesive strength despite exposure to extreme temperature, immersion in water, and steam.

Write us today for facts and case records. For utility and appearance don't place open specifications on lagging work - ask for Arabol Lagging Adhesive. Also — ask about our cork cement for adhering cork to cork on refrigerator lines.

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Adhesives?... ARABOL!

(Continued from page 320)

hydrogen. This may be burned directly as a low-heat-value fuel, as in a gas turbine or steam boiler, or serve as the "feed gas" for the manufacture of synthetic petroleum by the "synthesis gas" technique which American technology has so greatly improved from its German Fischer-Tropsch origin.

If feasible, the gasification of coal in its underground seam, without mining it, points to the possibility of exploiting coal seams which presently are too thin or impure to mine economically, as well as to worked-out coal mines in which some coal still remains

Coal Figures in Different Ways

The gas turbine development is significant to the future of bituminous coal in different ways:

1. Bituminous coal as solid fuel may be pulverized to the fineness of talcum powder and burned in the gas turbine. If this proves feasible—as is indicated—for the gas turbine railroad locomotive then the technique also has a big potentiality for stationary and marine power, with a marked advantage claimed in fuel economy

over liquid fuel.

2. Electric generating plants powered by the gas turbine could be located at the coal mines, and the electricity output sent over transmission lines to urban, consuming markets. Bituminous coal is the foremost fuel for making electricity in steam boiler/ turbine plants, and the manufacture of electricity in great quantities has usually been confined to locations providing an ample water supply, as rivers and lakes. The gas turbine requires no water, thus avoiding the costly, bulky equipment of steam plants, and the electrical plants can come to the coal instead of the coal going to them. The practical economics of this will depend upon the proximity of the coal mines to the electricity consuming markets.

3. The gas turbine may possibly be used to generate electricity from unmined coal by burning the gaseous mixture resulting from coal's gasification underground. Since this gaseous mixture would be a low-heat-content fuel, its practicability remains to

be proved.

4. The gas turbine figures in the prospect for manufacturing synthetic petroleum. Adequate water supply is a problem for synthetic liquid fuels plants, so the fact that the gas turbine power plant operates without water is to its advantage.

Gas Turbine Explained

The gas turbine literally operates on "hot air" because its working fluid is super-heated a'r. It is jet-power applied to ground usage. The coming of the practical gas turbine is due mainly to two things: (1) the development by jet-airplanes of metallic alloys which can stand-up to the 1,400° F. temperature range at which the gas turbine must operate to be an efficient power producer, and (2) the development of an efficient compressor for gulping-in and compressing air (gas) in great quantities. The gas turbine is simple, compact, and has low lubricating, maintenance and labor needs. Being waterless, it appears to be a natural for regions where water is scarce of alkaline.



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4-concentricity of threads. 5-uniform lead on threads. 6-sharp corners on sides of heads. 7-good washer face. 8-machine-cut points. 9-correct two-step heat treating. 10-desirable finish (good appearance).

Production by the Kaufman Process assures you cap screws that measure up to these qualifications. Write for folder "This is the Kaufman Process."



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PAGE STEEL AND WIRE DIVISION AMERICAN CHAIN & CABLE

In Business for Your Safety

Imagination in Purchasing

(Continued from page 89)

he finally decided to buy, he found dealers little interested in a trade-in of his rather ancient vehicle, so that delivery promises were deferred and his most hopeful prospect of relief involved a further wait of 18 to 24

At this point, he called on the purchasing department for help. We had been successful in several instances in getting new cars for employees who needed them in connection with their work. We wrote a letter to the branch manager, pointing out why we were interested in this man having a dependable car. However, we received no encouragement. In fact, we received no reply. The branch had been shut down for some time because of a change in models, and had only recently resumed produc-

Imagination Clinches New Car Deal

About this time, I happened to make an inspection visit to our new building, then nearing completion, and I noticed that the engineer's parking space, immediately in back of the building, was in the No. 1 spot, right next to the street. When I returned to the office. I dictated another letter commenting on how outof-place the shabby 1938 model car looked against our modern building, and suggesting that it would be far more desirable and effective publicity for the car manufacturer to have one of his latest model cars in this choice location, where it would certainly attract a lot of attention from the passers-by. Apparently this picture appealed to the imagination of the seller, too. As a result, I received a telephone call the next day, asking what model, color, and equipment our engineer wanted, and within a few days he had a sparkling new car. A little imagination in the purchasing approach had supplied the necessary clincher.

Numerous other examples could be cited, particularly in our efforts to get paper, which has been a difficult problem over a considerable period of time. However, the simple incident related above is probably sufficient to show that the use of imagination in purchasing can pay real dividends. Let's try to develop this quality to the greatest possible extent in ourselves, as well as in the other members of our departments. It will help purchasing to retain that important place in management that it has won because of a job well done during the difficult war and postwar periods.

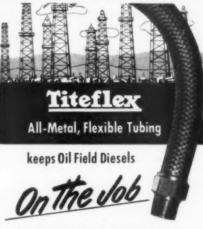
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Address

City.....State.....



Purchase Paint on Performance

(Continued from page 131)

tanium ore is introduced into furnaces at one end of the plant, and after a seven-day period of continuous processing is taken out at the other end as a finished product.

As high temperatures are involved, supplies of titanium are especially vulnerable to any coal or fuel oil shortages that may develop. Used in military greys, it is one of the pigments that might be in greatest demand by the government.

Demand and Quotas

Although the supplies of whites in shelf-goods are plentiful-largely because home owners have been reluctant to buy at current prices-the demand for industrial uses has been tremendous. Manufacturers of freezers, refrigerators, stoves, and similar items have snapped up available supplies. The demand here is variously estimated at 25 to 50% above pre-war

Another problem in the raw material supply, especially in that of titanium, has been the concern among paint manufacturers that if they do not take all of their 1948 quotas, their 1949 allotments will be cut.

As a consequence, some of them take their full quotas, and resell unneeded amounts. This material often reaches the black market. At the same time that the manufacturer's price was 17 or 18 cents per pound in Chicago, that quoted in New York was 65 cents.

Processors of the pigment, attempting to eliminate the black market, have used various color coatings for bags, and have traced down the resale of their product. In at least one case where black market sales were established, they cut off the buyer's quota entirely.

Considerable adjustment of quotas has been made by paint manufacturers who carry on their war time habit of trading needed supplies. Short on one product, the purchasing agent may be long on some raw material needed by someone else within the industry.

Shortages of Some Colors

Accounts for the organic colors have been running from 40 to 60% over prewar consumption. Needless to say, supplies of these greens, yellows, blues, and reds still keep the purchasing agent on the ragged edge. No one who was contacted, however, reported that production had been delayed because of actual shortages of these colors.

For a time when the price ceiling on linseed oil was 16 cents a pound, Russia, using the oil for food purposes, paid 26 cents f.o.b. Argentine ports. Supplies for American paints were cut short, but now linseed oil is in ample supply. However, it can't be stockpiled. If the government should require extraordinary amounts, it would take much of current production.

With domestic producers supplying between 10 and 15% of demand in this country, the supply of tung oil is also ample. Furthermore, the domestic production is increasing. Because of better methods of manufacture, which provide a clearer, more nearly pure product, the quality of American-produced oil is bet-

Synthetic resins are superior to natural resins, especially where paints and enamels must be baked at temperatures of 150 or 200 degrees, but the supply of these chemicals is more vulnerable to strikes than that of natural resins.

Advances in prices have also become the concern of the purchasing agent. Primary expenses in paint manufacture being those of raw materials and machinery, labor is a relatively small factor, except indirectly in the cost of coal, fuel oil, and transportation.

Prices of some raw materials will be, or already have been, advanced. Other charges also are certain to be higher. Therefore, unless something unexpected appears in the picture, the upward trend in prices of paint may be expected to continue. question is only to what degree the higher costs will be reflected in the cost of the finished product.

Alternate Sources Advised

In view of the long-range imponderables, some manufacturers advise that the purchasing agent investigate thoroughly his sources of supply to be certain that suppliers are not overcommitting themselves.

They advise, furthermore, that the buyer remain alert constantly to new sources that would be available in cases of emergency which might confront the most reliable suppliers. The latter may have the best of intentions, and may make no commitments that are not covered by anticipated arrivals of raw materials. Yet they might find their schedules upset by ony one of a dozen circumstances.

For example, although manufacturing facilities have been greatly increased, it is doubtful that paint processors could supply both heavy

(Please turn to page 328)



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Emerson-Electric Desk Fans —cooling, quiet breezes at the flip of a switch! 10, 12 and 16-inch blade oscil-lating models with famous Emerson-Electric long-life features, including 5-year, Factory-to-User Guarantee. laters—available in 24 or 30-inch sizes, with floor column, counter-column, wall-bracket, or ceiling mount-ing, with 5-year, Factory-to-User Guarantee. ing, with 5-to-User Gua

Purchase Paint on Performance

(Continued from page 326)

military and civilian demands without again making substitutions. The fact that the government may need materials already in short supply is a constant hazard.

The demand for industrial paints, originally estimated to be high for another year, now is expected to continue at peak levels for several years because of the European Recovery Plan and government stockpiling.

Paint manufacturers forecast, also, that it will require fully a year of uninterrupted production to fill the pipe lines with raw materials. Recovery in this field had never been completed after the 1947 walk-out in the coal industry.

Many manufacturers declare that they can take on all or part of a company's requirements, but they do not allow salesmen to accept new business without first checking available supplies with their sales managers.

The P. A. and the Public Contracts Act

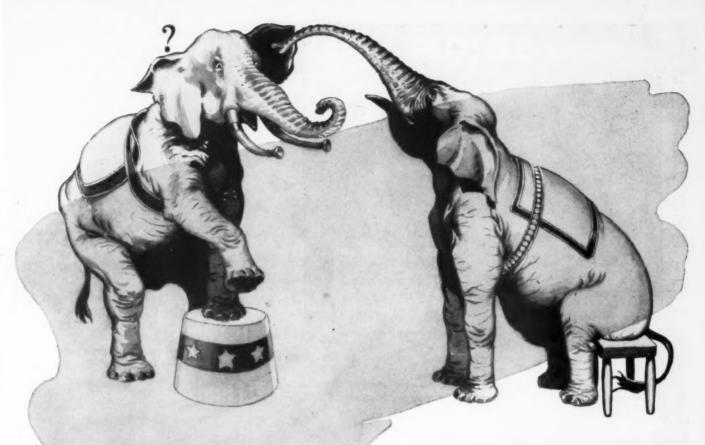
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(Continued from page 138)

ployers to realize that, unless the employer shows segregation of work, an employee who works for any part of a day in a given workweek on a Government contract subject to the Public Contracts Act must be paid at least the applicable minimum wage under the Public Contracts Act for all hours worked by him in that week. Only where there is segregation is the employer relieved from paying the applicable minimum wage for hours spent on non-Government contract work. By the same reasoning, where there is no segregation of records of work performed under two or more different minimum wage determinations, the employee must be paid the highest rate for the whole week.

The Public Contracts Act establishes basic straight-time working hours, as does the Wage and Hour Law. However, while the Wage and Hour Law provides that time and one-half pay, for overtime work, must begin after 40 hours of work in a week, the Public Contracts Act requires time and onehalf pay for work after eight hours in any one day, or after 40 hours in any one week, whichever will net the employee more.

Because of this difference, the em-(Please turn to page 330)



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before packaging

When you specify Strom Balls you are



LARGEST INDEPENDENT AND EXCLUSIVE METAL BALL MANUFACTURER



The P. A. and the Public Contracts Act

(Continued from page 328)

ployee may receive more under the Public Contracts Act, depending on his hours of work. To illustrate, the employee who has a workweek of four 10-hour days would receive no overtime pay under the Wage and Hour Law, but would be entitled to overtime pay for two hours each day under the Public Contracts Act. However, the employee who performs work for any part of a day on a contract subject to the Act must be paid in accordance with the Public Contracts Act overtime principle for any overtime work during that full week, regardless of whether segregation of work is shown by the employer.

Of course, there are exemptions under the Public Contracts Act for certain types of employees. In general, office, custodial, and maintenance employees, and those employed in bona fide executive, administrative, or professional capacities, as defined by the Administrator, are not covered.

Progress in Stock Pile Purchases

(Continued from page 108)

materials in the stockpile are to be used only in time of national emergency related to defense or war. At such time, the President or his designated agent may order disposal of the stockpile in furtherance of the national security.

The policy of the Munitions Board has been to buy materials for the stockpile at or below current market price. However, in response to the increased need for certain scarce items to bring the stockpile into balance, it may be necessary to have leeway from rigid adherence to this policy.

Standard procedures approved by the Comptroller General are followed by the Treasury Department in both execution and administration of stockpile procurement contracts.

The advice and assistance of industry has been actively sought by the Munitions Board through the medium of the Industry Advisory Committees. These committees have been formed so as to include producers, distributors, and users of materials involved in the stockpile program. Committee members are chosen to represent large, medium and small concerns in every section of the country. Each committee in

(Please turn to page 332)

A SLOGAN

our customers gave us

"When you think wire rope... think Bethlehem." We've been saying that for a long time—but many users beat us to the punch. They were "thinking Bethlehem" long before we ever used that slogan.

Some of our customers ... who started with small trial orders ... are now using thousands of feet annually. There's no mystery about it. Highest-quality product, careful attention to customer needs—that's the answer.

No matter what type of wire rope you want, Bethlehem makes it. You cannot buy finer ropes anywhere. You cannot get a better, more friendly kind of field service. That's why we so often hear those welcome words, "The rope on this job is 100 per cent Bethlehem."







Rubber-Coated Farm Basket for potato harvesting and general crop handling

*The Washburn Company Rockford, Illinois



Rubber coated egg baskets manufactured by the Washburn Company minimize egg breakage . . . cool eggs quicker . . . reduce handling costs . . . and help poultrymen get premium prices.

These especially designed baskets are constructed of dependable, uniform Keystone wire that has proper ductility for easy forming . . . a clean, bright surface for spot welding and rubber adhesion.

The efficiency of Washburn Rubber Coated Baskets is matched by sturdy construction . . . important reasons why Keystone wire is the choice of the manufacturer.

Whatever your wire need . . . Keystone can normally supply it.

SPECIAL ANALYSIS WIRE for all industrial purposes

KEYSTONE STEEL & WIRE CO., Peoria 7, Ill.

Progress in Stock Pile Purchases

(Continued from page 330)

turn, through working sub-committees, communicates with a large number of related industries. The objective is to encourage every segment of industry to assist and participate in the program.

Actual steps which have been taken to accelerate purchase of stockpile

materials are:

1. The transfer of materials to the stockpile from other Government agencies has been accelerated.

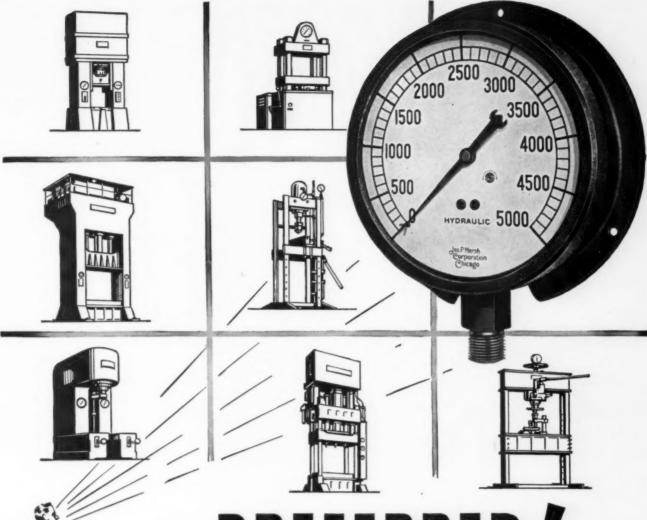
2. The Department of Commerce has undertaken a program of voluntary allocation agreements under Public Law 395, 80th Congress. Such a program is in the process of development by the Department of Commerce, in consultation with the Munitions Board. At the same time, members of the Industry Advisory Committees have been quick to recognize the prime need for adequate reserves of strategic and critical materials in time of emergency, and have alerted fellow members in industry to help find sources of supply for the stockpile. The Board reports increasing availability of materials as a result of this effort.

Expedition of Purchase

3. Purchase procedure has been expedited. The Board feels now that any material needed for the stockpile should be purchased unless the purchase is of such magnitude as to conduce to an inflationary process or threaten serious injury to the national economy. During the period of purchase policy formulation, purchase proposals to the Bureau of Federal Supply were referred to the Munitions Board for approval (based upon recommendation of the Strategic Materials Committee). Now that clear-cut policy has been laid down, once the purchasing officer is fully informed of the facts of a proposal, decision is largely a procedural matter. This step has important implications in respect to commodities for which offers are held open for only an hour or so, and quick action is essential. In cases where purchase policy is already formed, the trend is always toward utmost expedition of purchase.

4. The Board now considers itself free to accept the entire output of a new development (or expansion) resultant from a long-term stockpile purchase contract, until stockpile needs in respect to the item are fully

met.



PREFERRED!

. by 59 leading makers of hydraulic machinery

Hydraulic service imposes extra-heavy demands on pressure gauges. Applied to hydraulic machinery, gauges must be extremely accurate, yet sufficiently rugged to stand up under the high pressures and unpredictable shocks which characterize hydraulic operation.

As a result, manufacturers in this field are highly critical in selecting gauges. So there could be no more impressive tribute to Marsh quality and stamina than the preference accorded Marsh Gauges in this particularly difficult field.

Here is a field in which firms are large in size, but small in number; yet Marsh Gauges are currently used by 59 leading manufacturers whose output, conservatively estimated, represents a substantial majority of the nation's production of hydraulic machinery. The products include every type of equipment—testing, lifting, forging, forming, broaching and forcing presses applying pressures up to thousands of tons.

Yes, the designers of hydraulic equipment have recognized in Marsh Gauges the same combination of qualities that they have so well mastered in their own equipment—the combination of accuracy and stamina. A significant tribute, this, but merely one more example of the preference accorded Mash Gauges, in many fields.*

For your pressure gauge needs, why settle for

For your pressure gauge needs, why settle for less than the instruments preferred by the most critical users of pressure gauges?

JAS. P. MARSH CORPORATION

Dept. G, Skokie, Illinois

Export Dept.: 155 E. 44th St., New York 17, N. Y.

Jos. P. Marsh products include: A full line and range of gauges in pressure, compound, altitude, hydraulic, sprinkler, ammonia, ounce-graduated retard, test, and diaphragm types. Dial thermometers in rigid stem and remote reading types. A broad line of steam and hot water heating specialties. Ask for literature.

sures up to thousands of tons.

ing specialties. Ask for literation of the special control of the special control

*Subsequent advertisements will cite additional examples of this.



FOR YOU

FOR GIFTS

FOR PREMIUMS

Handsome New Marsh Duo-temp Thermometer shows outdoor and in-

door temperatures inside your home or office. Reads like a clock. Highly accurate. Write for details.





FOR longer service in a power machine blade the GRIFFIN SPECIAL ALLOY is your best buy. Molybdenum high speed steel, with strong, accurate rakerset teeth. Made also in hand frame sizes.

OTHER GRIFFIN BEST BUYS

For cutting hard alloys pick the GRIFFIN HIGH SPEED STEEL blade; power and hand sizes . . . for general hand sawing pick the improved NEW GRIFFIN . . . for cutting thin sheet and tubing pick GRIFFIN NON-STRIP . . . for precision contour cutting pick GRIFFIN BAND SAWS; metal-cutting and wood-cutting types.

Write for latest Griffin Price List.
JOHN H. GRAHAM & CO. Inc.

General Sales Agent Dept. C, 105 Duane St., New York 8, N.Y.

ASK YOUR DISTRIBUTOR FOR



HACK SAW BLADES AND BAND SAWS
Made by G. W. GRIFFIN CO., Franklin, N. H., Hack and Coping Saw Blade Specialists since 1880

Purchasing Policies

(Continued from page 96)

hood or false implication.

Forthrightness in dealing with vendors. Salesmen sometimes charge that while they don't get an order from a certain buyer he can't seem to bring himself to say a definite 'no'. In spite of the probability that the unfavorable reply may subject the buyer to a renewed sales harangue, the time will come when a decision is made and in all fairness the losers must be told.

Obtaining prices when no order is contemplated. It may be desirable to test the market occasionally when there is little likelihood of buying. There is a right and a wrong way to do this. The policy should be to avoid services from vendors under false pretenses.

Firm bids. It is unfair to other bidders to permit one to revise his old bid, but there might be circumstances where no interests are jeopardized which would permit the correction of a misinterpretation; the line should be carefully drawn.

Stated policies are the means by which to consolidate the gains brought about by experience. Having been over the ground, the route can be mapped for the sake of those who follow.

In closing, it might be well to point out that a policy is more like a guiding beacon than an inflexible rule. Deviation from policy may be permitted when conditions obtain which were not contemplated when the policy was drawn up.

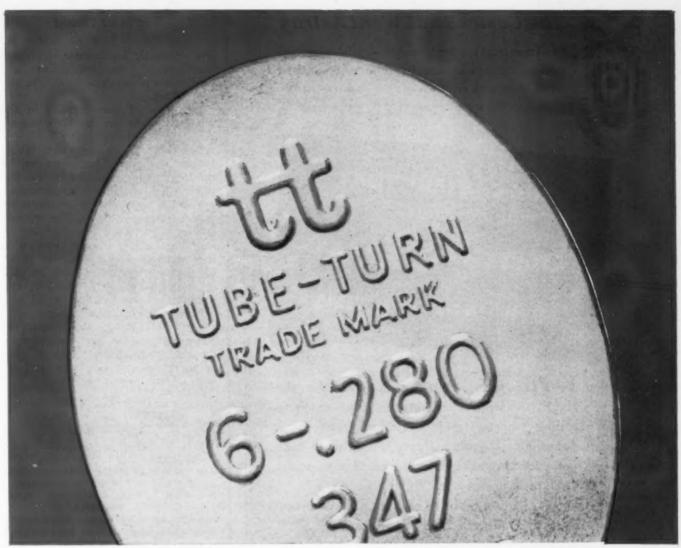
1 1 1 Dig in or Perish!

(Continued from page 136)

tice. There are epigrammatic portions of it that we would do well to keep constantly before us. Mr. Baldwin has carefully, even scientifically, examined all parts of the world in their strategic relationship with the United States. His observations about geographically remote "positions-in-readiness" will shock some inveterate isolationists, but his solid basis of fact makes his argument irrefutable.

On the tactical side he shows that the new technology of war makes all military force indivisible. The unification of the armed services of a nation is necessary because of the commonality of weapons and strategy. Mr. Baldwin's discussion of the urgent need for thorough military

(Please turn to page 336)



Portion of metal tag which identifies genuine Tube-Turn welding fittings

You know you're right with the no.1 name in welding fittings

LEADERS in any field have a priceless asset in their reputation. They can't afford to let you down. And you're pretty sure of buying right when you buy the best known brand. In welding fittings, it's "Tube-Turn". They have been widely recognized for more years than any other make.

Backed by the superior experience of the organization which pioneered in welding fittings, Tube-Turn products are dependable for strength, dimensional accuracy, and adherence to standards. They offer a wide range of types and sizes, metals and alloys, from which to meet your needs. And you get service in meeting your needs, through a well-established, nation-wide chain of distributors—supported by an outstanding system of

factory district offices and an engineering and research division that's miles ahead in welded piping technology.

For good service in good connections, buy "Tube-Turn."

TUBE-TURNS, INC.

246 E. Broadway, Dept. B, Louisville 1, Ky.

District Offices at New York, Philadelphia, Pittsburgh, Detroit, Chicago, Houston, Tulsa, San Francisco, Los Angeles



Write for the new and revised Tube Turns' chart of "Pipe and Fitting Materials". Covers ASTM and other specifications, chemistry, service temperature limits, welding data.







The Caster That Went Astray

Good men tried to steer it straight—nudging, urgingpushing, forcing—cussing. But it was determined to go off in its own erratic way...a path that led it quickly to the scrap heap.



EVERY Bond caster is designed for the conditions it meets in actual operation. Free-rolling wheels—steel or rubber tread—save your floors. Double ball race Bond casters take your loads...take the turns. They swivel easily and are easy on your men.

Get the caster that's exactly right for your operation. Get the free Bond catalog K-38. Sent on request.

BOND FOUNDRY & MACHINE COMPANY
MANHEIM • PENNSYLVANIA



Dig In or Perish!

(Continued from page 334)

and economic intelligence, economic mobilization, decentralization and continuous research, is forthright and compelling.

The day of huge armies in the winning of war has long since passed.

As Mr. Baldwin says it:

"Victory in modern war is no longer won by big battalions but by the big factories, backed by the big laboratories and the busy scientists."

But the big factories constitute an exposed and easy target. The price of power must be met by "digging in and dispersing"; it must be paid in toil, struggle and taxes. It is an enormous price, but it must be paid if we would preserve freedom and dignity for ourselves and for all who believe in democracy.

Mr. Baldwin's book presents to American citizens the challenge of the responsibility that rests on each of us, and warns us of the fatal results of ignoring or neglecting it.

UNIVERSAL CUPOLA BLOCK ANNOUNCED

A new design in refractory cupola blocks which permits the setting of a wide range of lining diameters with whole blocks of a single shape is now in production by Harbison-Walker Refractories Company, Pittsburgh, Pa. The given shape is reported as from two feet to eight feet and larger, inside diameter, in multiples of three inches.



The new shape, known as the Universal Cupola Block, is of standard 9" x 6" x 4" dimensions but features alternate convex and concave ends which form a highly flexible but tight fitted-curve end joint that maintains a complete contact over the entire end surfaces regardless of the diameter of the lining. In this manner the various lining diameters can be set entirely of whole blocks without cutting. The flexibility of the joint also permits accurate setting in stacks that are warped or slightly out of round. Because of the flexible joint, the Universal Cupola Block is recommended for vertical tanks or furnace linings rather than horizontal cylindrical shells.

The new blocks are a fireclay product of various blends and burnings to best adapt to particular cupola services. Three sizes provide 4½", 6" and 9" linings to be set. A new descriptive bulletin is offered by Harbison-Walker Refractories Company, Pittsburgh, Pa.

NEW TIMKEN® "DOUBLE-ZERO" BEARING

...raises the standards of accuracy in high precision applications!

UNTIL now, the most accurate Timken® bearing on the market has been the "Zero" bearing, with a maximum run-out of 150 millionths of an inch. This precision Timken bearing has made possible high standards of accuracy throughout industry.

Now The Timken Roller Bearing Company has developed the "Double-Zero" bearing which is twice as accurate as the "Zero"! Maximum run-out is only 75 millionths of an inch, and the average run-out is well under this.

It offers an opportunity for new and greater precision in machine tool spindles, scientific instruments, and many other applications where extreme accuracy is essential. As an extra step in manufacture, after assembly, a natural and true geometric contact is generated between all rotating parts of the "Double-Zero" bearing. This results in a "Generated Unit Assembly". It assures positive roll alignment, long lasting precision, permanent adjustment and smoother operation.

The "Double-Zero" bearing is the latest example of Timken leadership in serving the bearing needs of all industry... one more reason why it pays to look for the trade-mark "Timken" on every tapered roller bearing you use. The Timken Roller Bearing Company, Canton 6, Ohio. Cable address: "TIMROSCO".



This label on a product means its bearings are the best.

A PRECISION TIMKEN BEARING FOR EVERY REQUIREMENT								
CLASS	"00" (DOUBLE-ZERO)	"O" (ZERO)	"3" (THREE)					
RUN-OUT	.000075"	.000150"	.000300"					
TYPES AVAILABLE	Standard Single Row	Standard Single Row	All types					
SIZE RANGE	Up to 10" O.D.	Up to 12" O.D.	Up to 12" O.D.					

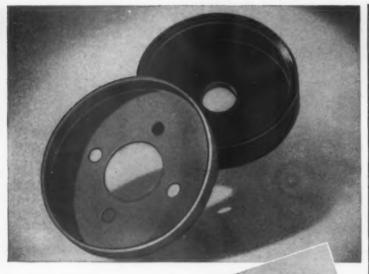
TIMKEN

TAPERED ROLLER BEARINGS



NOT JUST A BALL O NOT JUST A ROLLER THE TIMKEN TAPERED ROLLER BEARING TAKES RADIAL DAND THRUST - LOADS OR ANY COMBINATION





For Severe Leather Packing Service

Garlock BITAN • Leather Packings are tanned and treated by an exclusive Garlock process for the most severe leather packing applications. They operate satisfactorily at higher temperatures and

higher pressures than leathers of standard tannage and treatment.

In filling each order, the leather is properly tanned and treated for the particular service for which the finished product is to be used. All types or forms including: Molded Cups, "U" and "V" Packings, Flange or Hat Packings, Gaskets, Washers, and Discs. All sizes. Write for descriptive folder.



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... is so uniformly good ... so utterly dependable. From raw pulp to the finished roll, every step in the manufacture of Orange Core is controlled by experts—all in one plant. That's your guarantee of the consistent high quality that's made this tape "America's Most Popular Brand." Ask your supplier for Orange Core today.



This
MOTOR
comes from
a large
Family!



VALLEY Ball Bearing Motors are built in sizes from ½ hp up to 75 hp, providing wide adaptability in power planning. VALLEY'S cool running splash proof, dust proof construction insures long hours

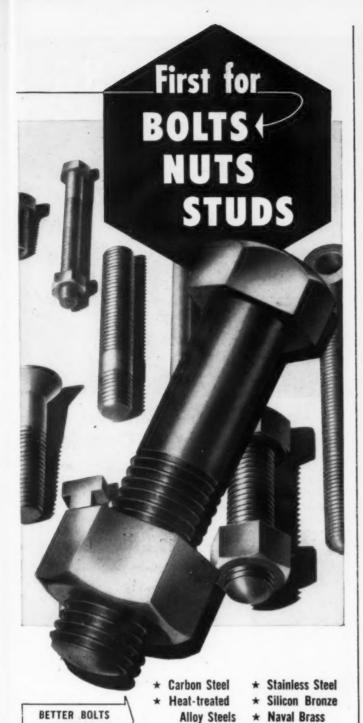


of dependable power under the most hazardous conditions.

You'll find the type of Motor you need in your power planning when you investigate VALLEY MOTORS.

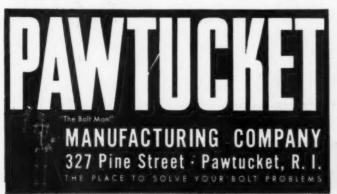


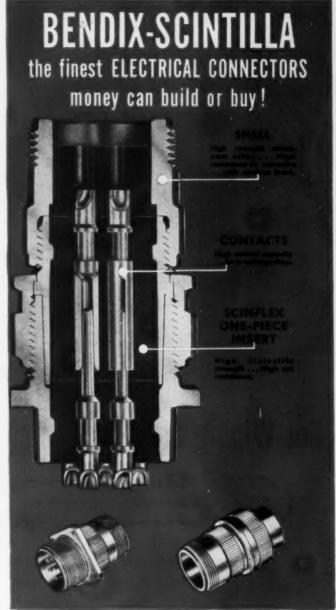
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4221 FOREST PARK BLVD. - ST. LOUIS 8, MO.



* Accurately made in standard dimensions or to your own specifications.

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AND THE SECRET IS SCINFLEX!

Bendix-Scintilla* Electrical Connectors are precision-built to render peak efficiency day-in and day-out even under difficult operating conditions. The use of Scinflex—a new Bendix-Scintilla dielectric material of outstanding stability—makes them vibration-proof, moisture-proof, pressure-tight, and increases flashover and creepage distances. Under extremes of temperature, from—67° F. to +300° F., performance is remarkable. Dielectric strength is never less than 300 volts per mil. The contacts, made of the finest materials, carry maximum currents with the lowest voltage drop known to the industry. The simplicity and soundness of design is demonstrated by the fact that Bendix-Scintilla Connectors have fewer parts than any other connector on the market—an exclusive feature that means lower maintenance cost and better performance.

Write our Sales Department for detailed information.

Available in all Standard A.N. Contact Configurations

SCINTILLA SIDNEY, M. Y.

SINCE 1882

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For Wiping and Polishing



Wiping precision



Polishing machined parts

Let clean, disposable KIMWIPES⁴ industrial wiping tissues standardize — and economize — your cleaning operation. Soft, yet strong, they're ideal for cleaning precision tools and instruments. Recommended for use on finely finished surfaces. And highly absorbent KIMWIPES remove dust, dirt, grease and oil — quickly, safely.

For further information and the name of the KIMWIPES distributor nearest you, write us on your business letterhead. Address Kimberly-Clark Corporation, Creped Wadding Division, Neenah, Wisconsin, U. S. A.

HARRISBURG

The Largest Manufacturer of Plate-Made Seamless Steel CYLINDERS in the World

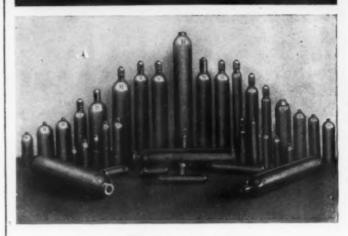


Plate-Made, Seamless Steel High Pressure Gas Cylinders

Standard or lightweight type. Plate-Made for maximum uniformity of side-walls and bottoms. Designed for capacities and pressures to meet specifications and requirements of all countries.



L-P Gas Cylinders

Uniformly durable . . . brazed edges of rolled steel cylinder sheets produce a union twice the strength of the original metal. Heads of uniform thickness are inserted and fused to cylinder by fillet weld thus assuring extra margin of strength and longer life.

Harrisburg Drop Forgings

Made in any design specified, in any quantity from our own custom made carbon or alloy steels. Harrisburg's battery of hammers includes capacities from 1000 lbs. to 8000 lbs.





HARRISBURG ALSO MANUFACTURES: Alloy and Carbon Steels; Seamless Steel CO₂ Liquefiers, Pipe Couplings; Hollow Forgings, Forged Steel Pipe Flanges.

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340

ALCOA ALUMINUM WOOD SCREWS



Bright . . . Corrosion Resistant . . . Light in Weight

WRITE FOR

Samples of Alcoa Aluminum Fasteners sent free when requested on your letterhead. Please specify type, length and size. When appearance counts in selling your product, if it's made of wood, plastic, or composition board, or if it's used outdoors—specify Alcoa Aluminum Wood Screws.

Corrosion-resistant

Alcoa Aluminum Screws prevent staining wood or other surfaces with red rust-streaks, stay bright and attractive. Available from stock, in sizes to No. 14, lengths to 2", round, flat and oval heads.

Wherever you use aluminum in your product, fasten it with Alcoa Aluminum Fasteners to minimize galvanic action that may result when aluminum and other metals meet. Aluminum Company of America, 619 Gulf Bldg., Pittsburgh 19, Pa.





REBUKE AND CARESS

Referring to your letter of August 26th, regret to advise that you cannot stop our subscription to PURCHASING, neither will we return the Ford Issue. We are not being arbitrary; we just couldn't get along very well without PURCHASING.

Our records show that our check #3725, dated 6/23, was issued to you to cover your invoice on our P. O. 79896-PB. No, don't stop PURCHASING. Only this morning the boss was reading an article in another publication about barge transportation. He was interested, and in just a few minutes by referring to my system of torn-out index sheets to your magazine, I was able to place my hands on an article entitled "Inland Waterways", in the January, 1948 issue, which gave much more information than the other article.

I am very sorry that you magazine folks can't keep your records straight, but am willing to help you all I can. Just keep PURCHASING coming.

George P. Crawford, Jr. Combustion Engineering Company, Inc. Chattanooga, Tenn.

CONTENTS PAGE NUMBER

I thought you might be interested in the following suggestion from Mr. T. Dempsey, our Chief Clerk.

R. C. Wenz, General Purchasing Agent Duquesne Light Company Pittsburgh, Penna.

MR. WENZ:

It has been rather difficult to locate the table of contents in the PURCHASING Magazine as the table of contents is not shown in the same place for each issue. I would like to call your attention to the last four issues:

		Page
April	Shown near bottom of left	
	hand corner	83-87
		03-01
May		
	cover	85-89
	61	02-02
June	Shown near bottom of lett	
	hand corner on cover	83-87
July	Section I (not shown)	95-99
		hand corner on cover

I would suggest that you arrange with the Editor of the PURCHASING Magazine to ascertain whether the table of contents and page numbers could not be printed in the same place of each issue, preferably at the right hand bottom corner on the cover.

T. Dempsey, Chief Clerk Duquesne Light Company Pittsburgh, Penna.

For many years, the Contents Page has been consistently located in the same position in each issue, immediately preceding the main editorial section. The three right hand pages preceding this section are devoted to (1) Contents, (2) Editorial Page, (3) Highlights of the Issue. This order is not varied. In addition, a page reference is usually printed on the magazine cover.

For our May issue each year, we use a different type of cover to honor the National President of N.A.P.A. Since this design does not lend itself to extra printed data on the cover, the "index to the index" is omitted or printed on the first inside page.

The July Ford Issue was a special case in every particular. The contents page is located as usual. In view of the fact that the entire contents of that issue comprised one integrated story on the Ford purchasing department, contrasted with the more varied subject matter of a normal issue, we felt that this notation and reference were less important in respect to the July issue, and decided to omit them rather than break into the cover portrait.

It happens that Mr. Dempsey's tabulation of four consecutive months includes both our May issue and the special Ford issue, and it makes us look inconsistent. The fact of the matter is that the position of the contents page is consistent in all issues except for rare "specials."—Ed.

BASING POINT BAN

In the June issue you have a feature entitled, "What will the Basing Point Ban do to Industry?" Would it be possible for you to request one of your experts to send me a short letter explaining the features of the Basing Point System and what it is in the cement industry's scheme which has been declared illegal?

F. J. White, Chief Buyer Chance Brothers Limited Birmingham, England

Delivered cost of materials consists of the manufacturer's price plus the cost of transportation to the buyer's location. A buyer located close to a supplier's plant would normally expect to have lower freight costs than one more remotely situated, and a producer would be at a disadvantage in seeking business from distant markets in competition with competitors located in those areas.

In the cement industry, certain cities were designated as "basing points" for pricing purposes. Quotations were made on the formula of manufacturer's price plus the cost of transportation from the basing point closest to the buyer, without reference to the actual point of production and shipment. Thus a producer selling in a distant market would "absorb" the freight charges from his plant to the designated basing point in the customer's area. Conversely, a buyer who might be located next door to a cement producer but not at a basing point city, would nevertheless be charged with the "phantom freight" from the basing point to his plant.

Inasmuch as production costs and manufacturers' prices throughout the industry were substantially the same, the net result of this system was that identical delivered prices were quoted by all companies. Cement buyers in any given area paid the same price regardless of favorable location, regardless of what company or companies they

bought from, and regardless of the actual point of production and origin of the shipment.

The Federal Trade Commission charged that this condition was the result of collusion on the part of the cement companies, and that it violated the country's laws by restraining competition and by discriminating against consumers located close to the mills. The cement companies said it was merely the result of competition, in the interest of orderly marketing.

The case was taken to the Supreme Court, which upheld the F.T.C. and forbade the cement companies to act "in concert to sell cement on a basing-point delivered-price plan which so eliminates competition that . . . prices are always identical at any given point in the United States". The Court also said that a cement producer cannot be allowed to realize varying mill net returns (delivered price less cost of freight) on shipments made to different customers competing with each other.—Ed.

ROUTING FORMS

Recently we sent you our check in the amount of \$6 to cover two years subscription for PURCHASING and also requested that you send us one year's supply of routing forms.

As these forms have not been received, we shall appreciate your advising if they have been mailed, and if not, when they may be expected.

J. G. Yoder Great Lakes Pipe Line Company Kansas City, Missouri

The routing forms will be along shortly. It is the practice of our Reader Service Department to accumulate routing slip requests so that a sizeable batch may be processed at one time. But not more than three weeks should clapse between request and receipt. The slips contain the name of the subscribing company and a list of purchasing and other personnel among whom PUR-CHASING is routed. There is no charge for this service—Ed.

PURCHASING IS INDEPENDENT

The writer belongs to the National Association of Purchasing Agents and regularly received the PURCHASING Magazine as a part of his membership.

We are, therefore, returning the attached invoice which you sent us.

O. H. Crouch, Purchasing Agent Tekni-Craft Beloit, Wisconsin

Although PURCHASING Magazine works closely with the National Association of Purchasing Agents, it is independent of that association. Therefore, association membership does not include a subscription for PURCHASING. In the '30s some purchasing agent associations subscribed for PURCHASING in bulk for their members. But this practice has not been followed for many years.—Ed.



1908 Plant of Deebler Die Casting Co.

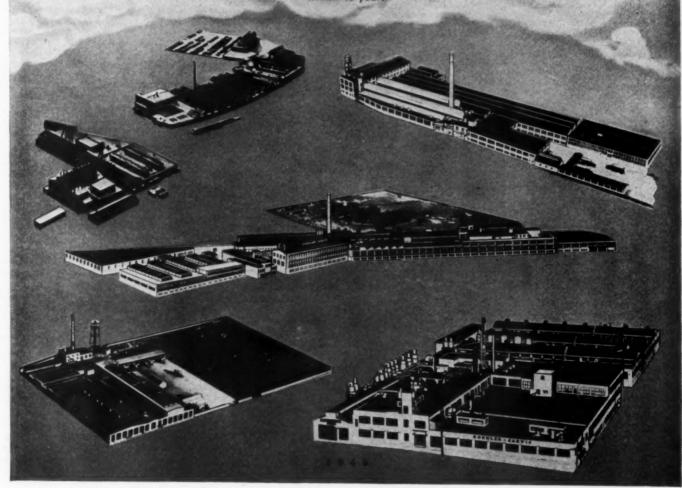
A vision becomes

REALITY

within 40 years



Founder of Doehler Die Casting Co.



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The World's Largest Producer and Finisher of Die Castings PLANTS IN: CHICAGO, ILL. - GRAND RAPIDS, MICH. - TOLEDO, D. - POTTSTOWN, PA. - BATAYIA, N.Y.



Executive Office

386 FOURTH AVENUE NEW YORK 16, N.Y.





Every Part is Guaranteed

Trimo Alloy Pipe Wrenches are made to exceed Government Specifications Type II Heavy Duty.... GGG-W-6510

Only Trimo Pipe Wrenches are manufactured through-out from chrome molybdeand manganese alloy

Only Trimo Wrenches have teeth hardened by modern'

induction localized heat-

Replaceable lower jaw saves buying complete new handle after the wear of extended use.

treating process to close Rockwell specifications.

Tests prove Trimo drop-forged steel handle capable of bearing strains up to 40,000 inch-pounds — more than double that of cast malleable handles in same size wrench.

Trimo's frame design is on the efficient "knee-action" principle - making possible one-hand use on otherwise two-hand jobs.

The ONLY ALL-ALLOY STEEL PIPE WRENCH

PART FOR PART AND SIZE FOR SIZE, THE MOST POWERFUL PIPE WRENCH EVER BUILT FOR INDUSTRY!

Here's the smoothest working, safest, most durable pipe wrench ever designed-hard in the right spots to bite, hold and stand wear-tough in the right places to take the severest stress in plant or field. Trimo-and only Trimo-has the extra strength of drop-forged alloy steel construction from end to end! Sold by leading distributors everywhere. Write for complete line catalog.

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DIVISION OF AETNA INDUSTRIAL CORP.

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Positions	Wanted										45€	line

Displayed\$8.50 inch

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Of Purchasine, published monthly at Orange, Conn. for September 1948. State of New York

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(My commission expires March 30, 1949.)

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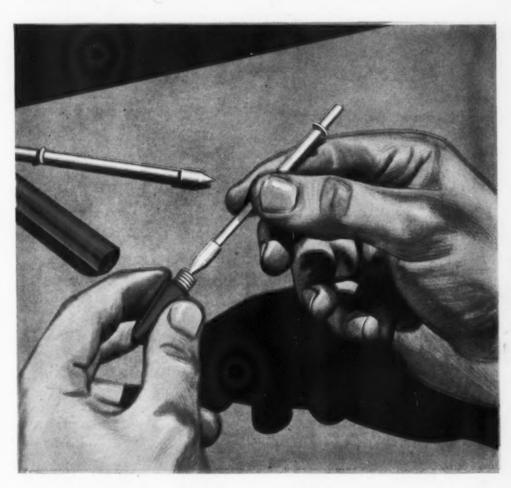
3 You'll find Bundy Tubing in toys, garden tools, clocks, and even shoe lasts like the above! A "thimble" of Bundyweld in the heel braces the key that pulls the last from the finished shoe. Now, want some new ideas?



4 Why not use Bundyweld Monel or nickel in steam irons? Bundy's thinner walls conduct heat faster (more efficient irons!) and its purity prevents steam from discoloring fabrics (higher quality irons!).



5 Maybe you could take a tip from Panel 1 above and check on Bundy for smaller air pressure lines in pipe organ installations. No other tubing offers all of Bundy's features. Available in steel, Monel or nickel.



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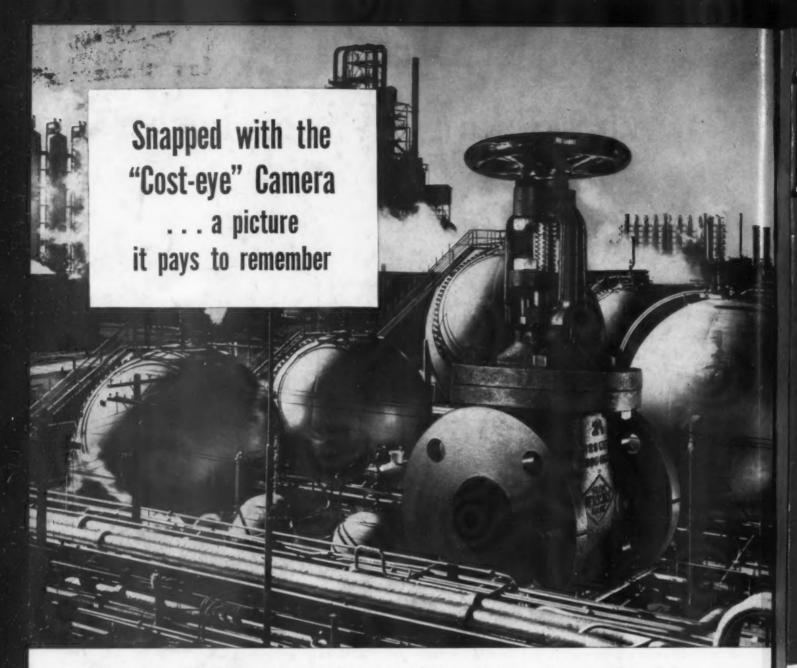
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